NORTH AMERICAN

EDI SERVICE PROVIDER PROFILES

INPUT

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Formed as a privately held corporation in 1974, INPUT has become a leading international research and consulting firm. Clients include more than 100 of the world's largest and most technically advanced companies.

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Electronic Data Interchange Program (EDIP)

North American EDI Service Provider Profiles

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Abstract

Electronic Data Interchange (EDI) is the electronic transfer of standard business transaction information between organizations in a structured application. The trading partners may have different processors and data formats, in which case translation between common formats or standards is required.

This report profiles sixteen current EDI services, six banks providing EDI and EDI/EFT services, three exclusively Canadian vendors, five industry clearinghouses, eleven companies with the potential of offering EDI services, and four "other" EDI-like services that provide EDI functionality on a geographic or otherwise limited basis, for a total of 39 profiles.

Market share estimates are provided.

The study is one of a series examining EDI markets and implementations. The report contains 116 pages and 10 exhibits, plus one appendix.

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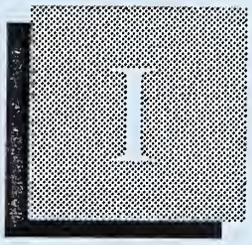


Introduction

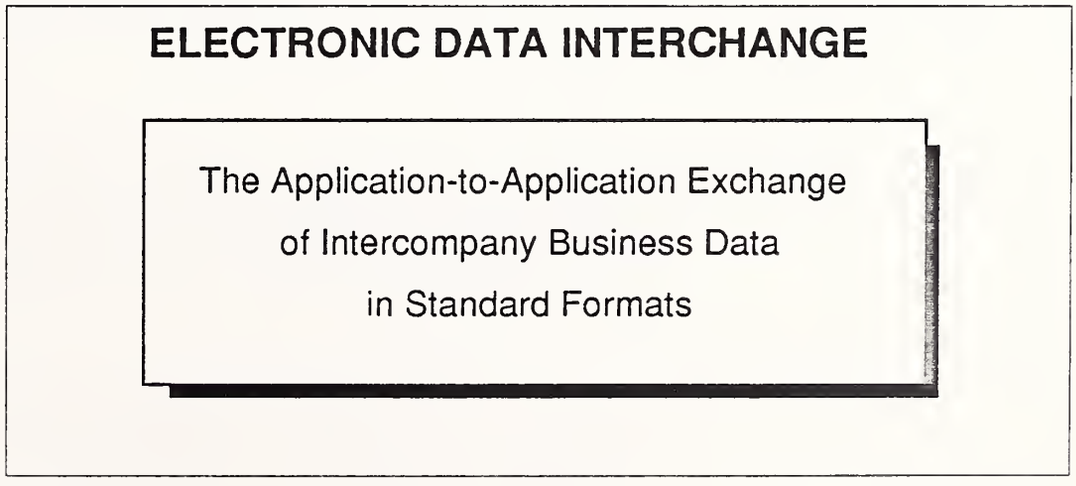
1 Introduction

A Background

This report, produced by INPUT's Electronic Data Interchange Program (EDIP), profiles 39 companies providing, or with the potential of providing, Electronic Data Interchange (EDI) network services.

INPUT defines EDI as the intercompany electronic transfer of business information between applications in a structured format conforming to a public or de-facto standard (Exhibit 1-1). The information represents standard business documents such as invoices, purchase orders, and logistical information. EDI techniques are also used for other applications such as health insurance claims and agency-to-company communications in the property and casualty insurance industry.

EXHIBIT I-1



EDI commonly involves the transmission of data in one of several standard formats, with the American National Standard Institute's (ANSI) X12 the emerging dominant standard. It may be necessary for data to be translated to a standard, either prior to transmission or by a third-party service acting as an intermediary in the transaction. It may also be necessary for the data to be translated again into formats recognized by a trading partner's computer.

EDI can be done in several ways: point-to-point, directly between trading partners; on private networks; or through third parties (Remote Computer Services (RCS) or Value-Added Networks (VANs)) that may provide translations between dissimilar processing systems and formats. VANs and RCS firms also serve as collection and switching services.

- Point-to-point approaches require scheduled transmissions and network management tasks, efforts that may prove difficult to accomplish as trading relationships become complex.

- Third-party services act as clearinghouses for EDI and can free users from most, if not all, of the network management and technical considerations associated with complex trading clusters.

Value-Added Networks have three primary roles in EDI:

- VANs provide the communications links for data transmission on a dial-up basis, a dedicated basis, or by providing private networks.

- VANs provide format, protocol, and speed conversions.

- VANs offer store-and-forward mailboxing.

The major VANs currently providing EDI services are McDonnell Douglas' Applied Communications Systems Company, GE Information Services Company, Western Union, CompuServe, Telenet, and IBM's Information Network.

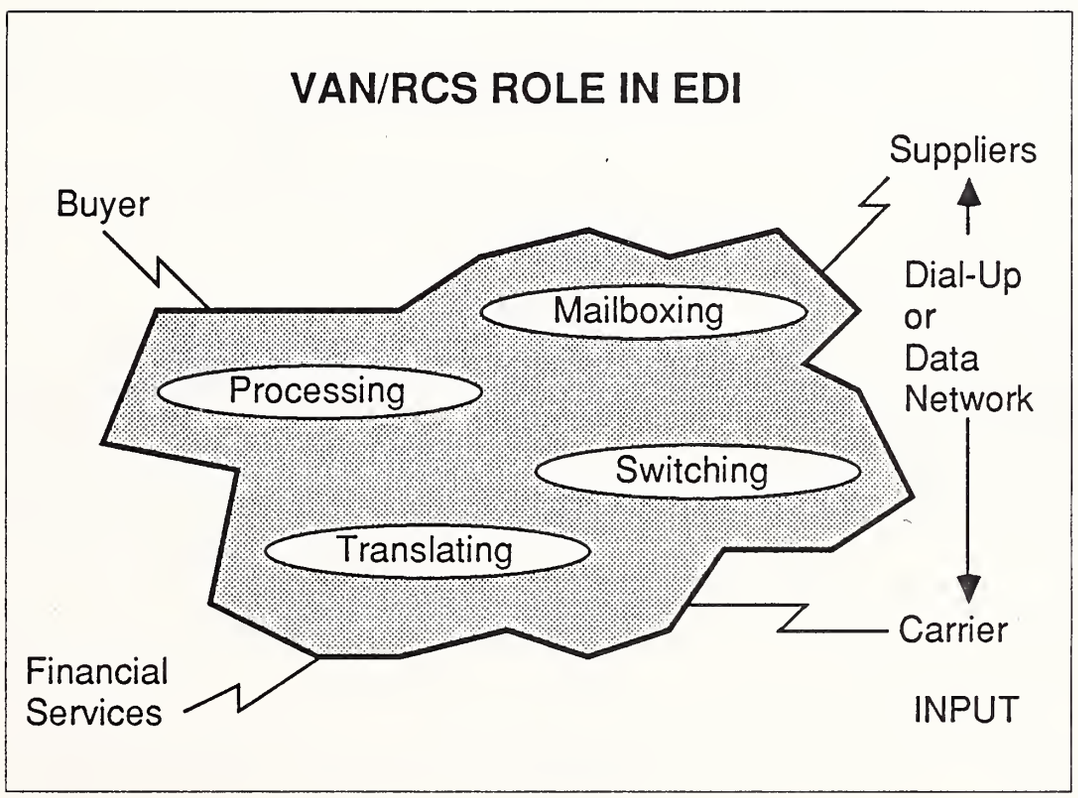
- With regulatory changes, several Regional Bell Operating Companies (RBOCs) are expected to offer EDI services through Local-Area Data Transport (LADT) services. In some cases, this will be through resale agreements, while in others RBOCs will likely participate as equity partners in independent companies.

RCS firms have a role similar to VANs except they usually do not operate their own network. Instead, customers use a VAN, direct dial-in, or an 800-number. Alternately, customers can supply computer tapes for processing.

Some RCS EDI participants are Control Data Corporation's Business Information Services, Sterling Software's Ordernet Division, Kleinschmidt Computer, TranSettlements, and Railinc.

Exhibit I-2 shows VAN and RCS roles in EDI services.

EXHIBIT I-2



The reasons for using EDI include the time value of information, cost avoidance, better inventory control, and other benefits from integrating EDI data and corporate information processing.

EDI is providing new lines of business for VANs, RCS firms, software vendors, and professional services companies. The principal participants have aggressively pursued EDI accounts and promoted EDI within industry segments, making for a competitive market environment. Although opportunities remain to be exploited, profitability has been elusive for many as competition increases.

However, users ultimately benefit from industry competition through a variety of choices, competitive pricing, and improved services.

B

Scope

This chapter presents EDI definitions, and provides market share data and other measurements regarding EDI service providers. A full analysis of trends and directions in this market can be found in other INPUT research reports.

The rest of the study profiles EDI service providers categorized as follows:

- Value-Added Networks and Remote Computing Services now providing EDI services (Chapter II).
- Recent market entrants, such as AT&T, Compuserve, and Telenet (Chapter III).
- Bank EDI providers (Chapter IV).
- Canadian EDI service providers (Chapter V).
- Companies that have the potential for offering EDI, and that INPUT believes may be developing such services (Chapter VII).
- "Other" EDI and EDI-like services, such as regional buying networks (Chapter VIII).

Definitions of EDI-related terms are found in Appendix A.

It had been INPUT's intention to reproduce VAN/RCS EDI pricing sheets; however, at press time, several services announced pricing changes that had not yet been formalized in their publications. Current pricing is available from the vendors themselves or, for INPUT's EDI Program Subscribers, from INPUT's "hotline" customer inquiry service.

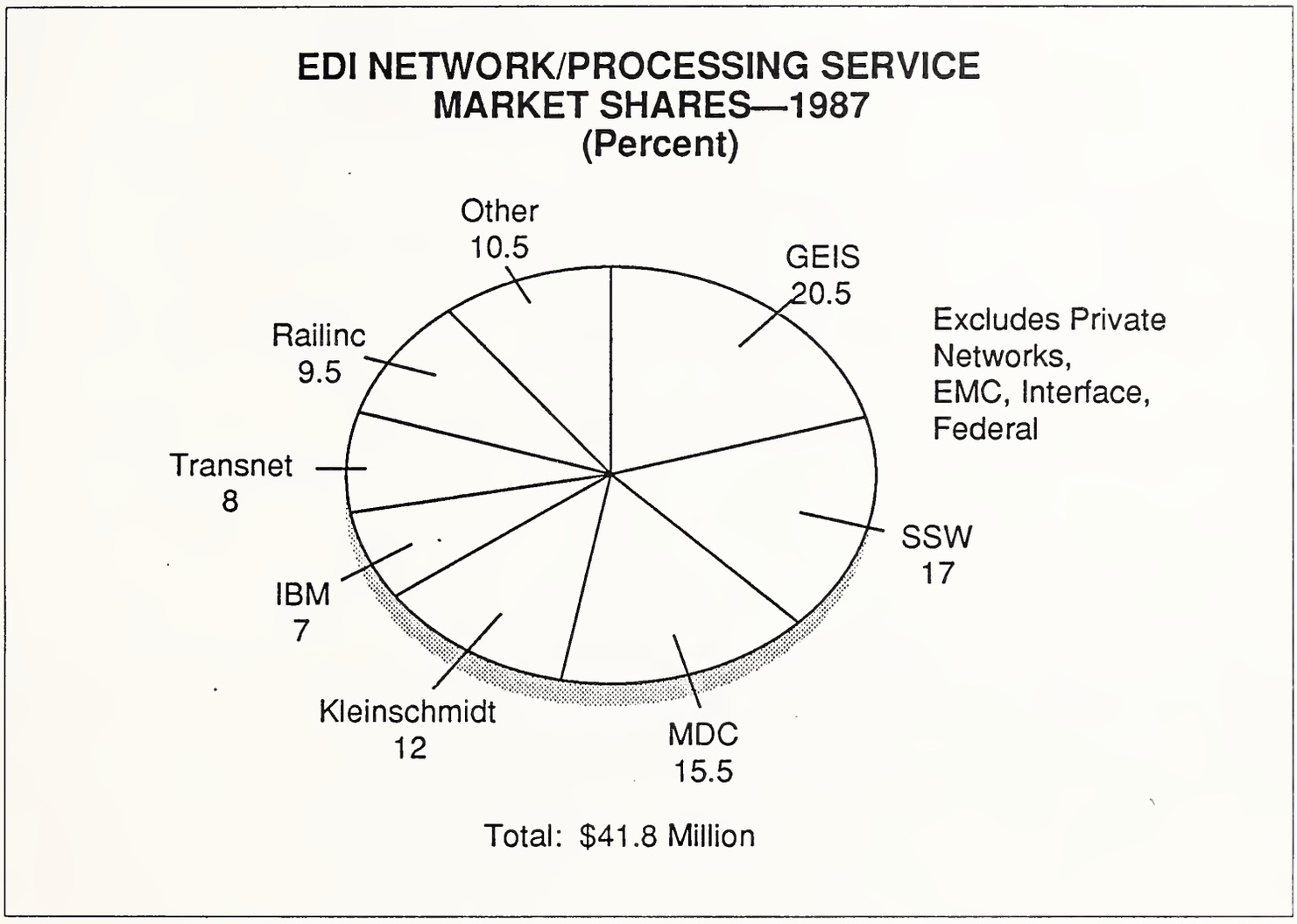
C

EDI Service Providers—Market Share Data

Exhibit I-3 shows relative 1987 market shares of vendors offering "mainline" EDI services.

- INPUT categorizes "mainline" EDI as services oriented toward purchasing, logistics, and financial transfer (EDI/EFT).

EXHIBIT I-3



- The exhibit excludes private network expenses in support of EDI, and "other" forms of EDI, such health insurance claims and batch insurance interface.

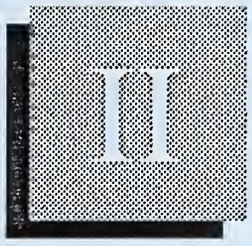
D

Related INPUT Reports

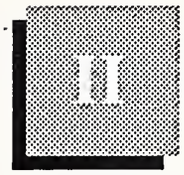
This study is one of a continuing series focused on EDI. Other reports published or planned for the series include:

- *EDI Service Market Analysis*
- *Vertical Industry EDI Directions and Potentials*, examining unique issues and market potential in approximately 30 industry sectors
- *Value-Added Data Service in Western Europe*, focusing on EDI and EFT applications

- *EDI Software Markets and Issues, 1988-1993*
- *EDI Software Product Provider Profiles*
- *X.400 and EDI*
- *EDI in Professional Services*
- *EDI Implementation Case Studies*
- *International EDI Services*
- *Federal Government EDI Initiatives*



VANs and Remote Computer Services Providing EDI



VANs and Remote Computer Services Providing EDI

Several of the major value-added networks (VANs) and Remote Computing Services (RCS) provide EDI services, as do several smaller RCS firms.

This chapter profiles these companies and their services, estimates their market revenues, and analyzes their stated or apparent strategies.

A Control Data Corporation

1. Background

CDC markets computer equipment, associated maintenance services, computer services, and financial services.

2. Services

CDC's computer services, software products, professional services, and turnkey systems are dispersed among several operating units, such as:

- Business Services Group targeting various vertical markets, including broadcasting, banking and financial services, manufacturing, legal services, as well as Fortune 1000 and small businesses.

- Computer Systems and Services provides Computer-Integrated Manufacturing, Computer-Aided Design, Manufacturing and Engineering services (CIM, CAD, CAM, CAE), and scientific information services.

3. CDC and EDI

CDC's Redinet Intercorporate Business Transaction System (Redi-Ibits) was announced in late 1984 and introduced in spring, 1985 under a joint

marketing agreement with AT&T. Included in Redi-Ibits are EDI, E-Mail, networking, and associated services.

EDI software running on CDC's processors was developed by Program Sciences Incorporated (PSI). Control Data handles EDI processing, installs and maintains customer premises equipment, and administers the software through an arrangement with PSI.

In late 1986, several low-cost micro-based EDI software and communications packages were introduced, and the company is now marketing minicomputer software from another firm and evaluating mainframe resale agreements.

RediNet supports virtually all EDI standards.

Redi-Agent service is a customized EDI transaction retrieval and forwarding service designed to assist suppliers in accessing large companies maintaining private EDI networks.

- Control Data acts as an authorized agent to access and retrieve business information from one or several private EDI systems.
- Translations, as necessary, are performed.
- Data is then forwarded to the customer's RediNet mailbox, or delivered via a dial-out service directly to the company.

Redi-Agent obviates the customer's need to customize EDI interfaces to private networks.

Electronic Mail, called REDI-Mail, is provided automatically to users of RediNet services. Hardcopy and FAX delivery EDI options were being examined. The company claims it can handle its customers' hardcopy conversion requirements itself, but was negotiating for offsite laser printing and mailing services.

4. Major Alliances

RediNet uses AT&T's Accunet as the transmission network, with AT&T responsible for network marketing under the name of RediAccess. In practice, CDC staff has sold the service, and with AT&T's market re-entry, this relationship is subject to review.

CDC does not appear to have any EDI agent agreements, and its primary alliances appear to be with large "hub" customers.

5. Major Customers

CDC is used by diesel engine maker Cummins Engine, which established its first EDI connection through CDC in January, 1986. Cummins had 125 of its suppliers connected by the end of that year. The following year, approximately 350 suppliers were communicating with Cummins, including at least one plant operating off shore. On the sell side, Cummins trades electronically with 10 customers who represent 90% of the company's dollar volume.

Other customers are Gates Rubber, Vallen, 3M, and AT&T Tech.

6. EDI Strategies

CDC's overall strategy is to engage only in businesses that are a strategic fit and meet its criteria for financial success.

CDC's EDI users are generally in distribution, metals, automotive, and related industries. The company received early endorsements from several distribution industry associations.

CDC markets the EDI processing service through its Lakewood (Ohio)-based MIS division.

- This approach was taken to combine product ownership, technical expertise, and marketing.

- The company feels this integration will lead to superior service (one of the few areas where a vendor can differentiate) and better responsiveness to customers' needs. INPUT's surveys uncovered no user complaints about CDC's customer service.

- Since inquiries regarding EDI often originate from IS departments, having technically oriented personnel as the first customer interface can lead to innovative responses to technical considerations. The company believes this approach may make the difference in closing sales.

- However, staffing resources for CDC's EDI efforts have been controlled.

Control Data handles internetworking through the Network Transfer Service EDI clearinghouse, which was earlier abandoned, then resumed.

- NTIS was originally intended to encourage third-party vendors to address internetworking issues.

- Currently, RediNet supports internetworking, billing users a flat $25 per month fee for any month in which internetworking occurs. This approach differentiates the service from others, which charge a per-transaction off-network fee and often a set-up charge.

By offering micro software, CDC feels it is facilitating EDI usage by smaller companies that need to electronically communicate with larger trading partners as a condition of doing business.

RediNet is positioned as a low-cost service. The company does not charge start-up fees, and there are no monthly minimums.

7. Financials

Due to heavy losses (primarily in the hardware area) between 1984 and 1986, there was speculation that all of Control Data Corporation would be acquired.

- Revenues of $3,366.5 million were reported in 1987 for the company, with net earnings of $21.5 million, which includes investment restructure credits of $107.6 million. This marked a return to profitability due to restructuring and refocusing on the company's "competitively advantaged" products and services.

- CDC officials maintain that CDC is committed to the EDI business. The Business Services Group, which includes EDI, has had increasing revenues over the past three years, and is said to be profitable.

CDC officials report that in terms of revenues, character counts, and customers, EDI activity for the company at least doubled between 1986 and 1987.

RediNet has as many as 400 users, although the number of customers is lower; users can access RediNet on a "no-host" basis, or use the Redi-Agent service, with usage fees paid by the customer.

INPUT estimates CDC's 1987 revenues for EDI services at $1.5 million.

8. Comments

CDC's joint marketing arrangement with AT&T is believed a disappointment. However, the relationship, which carries over into the protocol conversion done by CDC for AT&T's Accunet services, has fueled past speculation that AT&T would acquire CDC, or at least a portion of it. With AT&T again in the EDI market, such speculation would tend to be extended.

CDC is working to improve its marketing profile, recently adding staff to the half-dozen or so formerly dedicated to EDI.

CDC users interviewed by INPUT granted high marks for customer service and technical quality. However, the company's low market profile and its lack of international service were cited as detractions.

B

GE Information Services Company (GE)

1. Background and Services

GE offers broadly based remote computing and value-added network services, with applications supporting international commodities, securities and currency markets, and international banking. Other industries served include manufacturing, petroleum, forest products, shipping, retail, health care, and computer hobbyists.

2. GE and EDI

GE has positioned to become a major EDI provider worldwide. This direction is underscored by the name of the EDI division: Worldwide Intercompany Logistics Business.

The company reaches approximately 70 countries through various facilities and maintains processing supercenters in the U.S. and the Netherlands.

A cornerstone of GE's strategy is alliance building, with joint marketing agreements and agent relationships. It has also worked with industry groups to win endorsements for its EDI services.

EDI*Express provides mailbox service or optional out-dialing. On-network translations are available. Billing can be shared by trading

partners, even internationally, with the system able to accommodate fluctuating currency exchange rates. Detailed billing is available.

After first distributing software from other companies, GE is now offering its own translators. Additionally, the company has several software alliances with companies specializing in vertical industries such as auto, apparel, and metals.

GE EDI support and installation services were initially provided without charge, but are now delivered on a fee basis. Installation support is done through GE Consulting Services, although this internal alliance has only been recently established.

EDI services are sold to the largest members of a trading group in a consultative process, then telemarketing and other methods are used to sign smaller accounts in the group. This is a "hub and spoke" approach.

GE's EDI services are:

- EDI*Express (domestic), now incorporating the product offerings previously designated Trade*Express for international trade applications. GE's domestic service and those provided by its joint venture, called International Network Services in the U.K., have been linked.

- EMC*Express (health claims processing).

  - This service enables doctors and hospitals to submit insurance claims to 50 insurance companies, and to Medicare and Medicaid programs. It is basically a transport service into National Electronic Information Corporation (NEIC).

  - INPUT believes EMC*Express is not yet fulfilling expectations because health-care providers can often submit electronic medical claims directly to insurance companies without transaction charges. Also, the primary market for EMC*Express, physicians, have generally not yet adopted practice management systems, nor do physicians have a pressing need to improve cash flow.

  - In mid-1988, GE enhanced EMC*Express by offering micro-based software called Collect*Express, which identifies overdue accounts and assembles them in a batch file for submission through GE to Transword Systems, Inc. (Rohnert Park, CA), a bill collection agency that issues dunning letters. The software will be adapted to other industries in the future.

- Design*Express (supporting CAD/CAM engineering and specification drawings). Intended for manufacturing applications, it is being resold by Dallas-based Microdynamics into the apparel manufacturing industry. Microdynamics sells CAD/CAM systems for that industry. The intention is to ultimately link graphics with EDI documents in request for bid and other application areas.

Additionally, GE supports several private and industry association networks. For example:

- Catspeed, Caterpillar Tractor Company's private EDI implementation.
- Haggar Apparel Company's HOP (Haggar Order Processing).
- Levi-Strauss' LeviLink.
- PetroEx, the Petroleum Data Exchange System. This covers EDI-like functions, using industry-specific formats, and is organizationally not part of GE's mainstream EDI efforts.
- Transnet, operated by the Motor Equipment Manufacturers Association (Englewood Cliffs, NJ). This, too, is not a part of GE's EDI unit. Transnet has approximately 6,000 users, predominantly on a "no-host" basis, meaning users do not pay transaction fees, but the suppliers do.
- Pubnet, sponsored by the National Association of College Stores and the Association of American Publishers, supports title searches and EDI order processing among some 400 bookstores and 19 publishers.

Working with Baxter Travenol Laboratories (Deerfield, IL), GE is expanding the scope of that company's ASAP private EDI system for hospital purchasing. The new system is called ASAP*Express.

GE is actively pursuing international EDI applications and supports the GTDI and EDIFACT international standards in its services and software.

- Trade*Express, described as a conceptual grouping of services, is targeted to exporters, freight forwarders, banks, carriers, custom house brokers and others involved in international trade. The market concept incorporates integrated EDI, electronic mail, a bulletin board for sharing information, computer conferencing, and trade data base inquiry capabilities.

- Through the First National Bank of Chicago, GE provided networking for the bank's Accelerated Trade Payments service for international trading companies, to improve international financial transactions. The First Chicago offering was subsequently withdrawn.

GE Canada, a service that predates the U.S. EDI*Express by several years, operates in the grocery, warehousing, general merchandise, and natural resources areas, with approximately 120 customers by the end of 1987.

3. Major Alliances

In addition to the software alliances described above, GE has formed relationships on an international basis.

- In the United Kingdom, GE Ltd. has joined with STC International Computers Ltd. (formerly ICL) to form International Network Services Ltd.; the hybrid company offers EDI services. INS is connected to the domestic EDI*Express service and will likely serve as a gateway to the European community for international EDI traffic.

- The company is pursuing relationships in West Germany, France, and elsewhere.

  - With Finland's Nokia Information Network Services, the company will establish a processing center in 1988 for domestic and international EDI, licensing its EDI software to the partner.

  - GE and Swedish software firm Transtema will integrate their systems and services, targeting freight and shipping industries. Transtema is owned by shipping interests.

- The Japanese GE affiliate ISI-Dentsu has been distributing GE's teleprocessing services in Japan since 1971.

  - In July, 1987, ISI-Dentsu of America was formed to market GE's services to Japanese companies operating in the U.S. It will be based at GE's Rockville (MD) headquarters and will target the over-150 Japanese concerns operating in the U.S. in financial services, automotive manufacturing, electrical/electronics, machinery, and trade.

GE's other teleprocessing services are sold by its affiliates and distributors worldwide.

Exhibit II-1 shows GE's international distributors.

EXHIBIT II-1a

GE INFORMATION SERVICES INTERNATIONAL DISTRIBUTORS

COUNTRY	DISTRIBUTOR
Australia	GEIS, A Division of Australian General Electric (Sales) Ltd.
Austria	General Electric GmbH
Bahrain	National Company for Commerce and Industry
Belgium	S.A. General Electric Information Services N.V.
Canada	Canadian General Electric Company Ltd., Information Services
Denmark	EAC Data (DK)
Egypt	Nile-Net International
Finland	NOKIA Corporation
France	S.C.J. Informatique and GE Information Services
Ireland	GEISCO Ltd.
Italy	General Electric Information Services S.P.A.
Japan	Dentsu, Ltd.; C&C International; and NEC Corporation
Korea	Data Management International, Ltd.
Malaysia	Formis Computer Services
Mexico	Tiempo Compartido, S.A.

EXHIBIT II-1b

GE INFORMATION SERVICES INTERNATIONAL DISTRIBUTORS

COUNTRY	DISTRIBUTOR
Netherlands	General Electric Information Services B.V.
Norway	General Electric (USA) Information Services A/S
Phillipines	General Electric Information Services, a Division of General Electric International Operations
Saudi Arabia	Saudi American General Electric Company
Singapore	General Electric (USA) Asia Company
Spain	General de Informatica S.A.
Sweden	General Electric (USA) Information Services AB
Switzerland	General Electric Information Services S.A. and AG
Taiwan	Vanguard Information Center, Inc.
United Arab Emirates	General Electric Technical Services Company
United Kingdom	GEISCO Ltd.
Venezuela	GEISCO
West Germany	General Electric Information-Service GmbH

4. Major Customers

Among the company's major EDI customers (in addition to those named above) are: Allied Stores, Macy's California, Mervyns, Montgomery Ward, Toys 'R Us, General Tire, Gillette, Haggar, Navistar, North American Phillips, Eastman Kodak, Hasbro, Hoechst-Celanese, 3M,

Parker Brothers, Pillsbury, and Spartan Mills. Some of these companies, and others in Canada, may be using another third-party network in addition to GE.

5. Strategies

GE's corporate philosophy is that the company will not enter any business where it cannot achieve a dominant or near-dominant position.

GE's plan is to leverage its global network presence, and to focus on selected
cross-industry applications.

- GE earlier defined "focused markets" as including EDI itself, business logistics (or the movement of goods and materials), and international trade. The renaming of GE's EDI division reflects this approach.

- INPUT believes the company will focus additional attention on financial applications. With its corporate parent as the test-bed, GE was developing an electronic payment system that will be commercialized in the 1989-1990 timeframe. Other financial services are possible in partnership with its corporate financial services affiliate Kidder, Peabody.

Parent company GE is reportedly intent on growing rapidly and, with a substantial cash reserve and a favorable debt-to-equity position, may continue its acquisition pattern to achieve its goals. EDI has become an important part of corporate GE's growth plans, and is seen as helping to reduce headcounts in manufacturing operations.

Within EDI, GE has demonstrated an alliance strategy, signing with agents to sell its services along with the agents' software and equipment. The agents also provide training, implementation assistance, and continuing support. Agent agreements are in place with:

- ACS Network Systems (Concord, CA) for sales to the apparel industry.

- American Business Computer (Farmington Hills, MI) for the auto industry.

- Can/Am Tech (Hamilton, Ontario) for sales and support in the metals industry.

- McCormack and Dodge (Natick, MA) for software integration.
- Microdyamics (Dallas, TX) for Design*Express in the apparel industry.
- MSA (Atlanta, GA) for general joint marketing.
- Supply-Tech (Southfield, MI), which sells to the auto industry.

Further, a generic pharmaceutical data base provider (Distribu*Net, Dania, FL) is using GE for data base distribution and EDI applications.

Rather than solely providing basic network services such as electronic mail in its overall network/processing services, GE has positioned its services and applications in several targeted markets. However, there appear to be few exceptions in this so-called targeted approach with EDI, meaning GE is taking a near commodity approach.

In late 1987, the company restructured its pricing to make it more competitive and economical for users to send short EDI documents. In mid 1988, the company removed charges for establishing internetworking arrangements, going instead to a low monthly internetworking charge.

In February, 1988, EDI*Express was upgraded to release 6.0, adding international support, a link with GE's joint EDI venture in the United Kingdom, a translation between EDI envelope addresses, a streamlining of the administrative system, and other enhancements.

GE apparently feels an aggressive approach to the domestic and international EDI market will bring it long-term relationships with its customers, agents, business partners, and private EDI network users. Once signed, users may be reluctant to move to another firm. Thus, gathering market share early in the game may well be worth the significant investment the company has made.

6. Financials and Market Position

In 1986, GE invested an estimated $15 million and the skills of approximately 150 professionals in EDI, focusing individuals on specific industry segments. INPUT believes that the company's EDI unit is expected to break even by the end of 1988.

At the end of 1987, the company had 1,700 users on EDI*Express, making it the largest EDI third-party service provider. By mid 1988, the company claimed approximately 3,500 users worldwide.

- By comparison, in March, 1987, GE claimed 700 corporate users of EDI*Express, up from the December 1986 customer count of 510.

- These figures do not include users of private or industry association EDI implementations hosted on GE's network and processors. For example, the CATSPEED network has approximately 600 users. This network is moving from a "private" orientation to be part of the broader EDI*Express service.

- These figures also do not include Transnet or PetroEx users.

The company is believed to have experienced revenue growth in the range of 7-20% monthly for the past year.

INPUT estimates GE's total 1987 EDI service revenues as in the $9-10 million range, with EDI*Express accounting for approximately $7-8 million, and other EDI systems/services such as PetroEx producing $1 million. There are additional revenues from software, private EDI networks (estimated at $2 million), and professional services that could be called EDI and EDI-related, such as port systems. Revenues from Transnet are not included in this calculation. GE Information Services is clearly the current market leader.

7. Comments

GE is working to expand its international capabilities, and recently won access to EDI data in one of the world's busiest harbors, the Port of New York and New Jersey. It worked to develop the port automation system there called ACES.

GE has been criticized as being too large to properly support customers, and as focusing efforts on closing the deal and providing commodity services. In some instances, this has no doubt been true in the EDI area; there have been unhappy customers.

- GE's "hub-and-spoke" approach brings many smaller companies to EDI—some perhaps reluctantly, and thus inclined to find fault.

- GE is attempting to mute criticism by pointing out that bringing EDI into a company's computer systems highlights existing problems.

GE staffers are certainly aware of the need to provide customer support. The EDI area has started a user's group and is publishing newsletters, and management is sensitive to the issue.

The "economy" orientation of the company has led some senior managers and staff to find more lucrative positions outside of GE; nevertheless, GE believes EDI and financial services are central to its growth.

C

IBM's Information Network (IIN)

1. Background

The Information Network was formed in 1982 as an independent business unit (IBU) within IBM, offering SNA networking and remote processing services.

IIN was upgraded in 1985 with new computer center facilities, and other measures designed to improve large users' abilities to connect their own SNA networks and to link with other customers.

In mid-1988, IBM enhanced the network, allowing access via SNA from Canada and 11 European countries. Additionally, X.25 access is provided from 40 countries.

Access is available from 276 connection points in the U.S.

2. Services

IIN supports two services:

- Network Services, for linking a customer's mainframes and terminals in a managed SNA network environment.

- Information Exchange, which provides "store and forward" and other value-added services, including EDI.

The target markets for IBM's Information Network are best described as "dedicated IBM shops."

3. IBM and EDI

IIN hosts Ad/TRACs (Advanced Transaction Rearrange and Conversion System), from Advanced Technology Systems (Norcross, GA), for on-line EDI translations and also for its Insurance Communications Services. However, the company discourages on-network translations, encouraging users to transmit transactions in the necessary format.

- IIN's Insurance Communications Service performs EDI processing, message switching, and protocol conversions between independent insurance agents and corporate underwriters.

- The Insurance Value-Added Network Service (IVANS), discussed in Chapter VI, uses IBM's service supplemented with customized facilities, supervisory and support services.

IBM is emphasizing EDI services on the Information Network.

- The company has adapted its Industry Marketing Assistance Program (IMAP) to the EDI area, allowing software firms to jointly sell an EDI solution with IBM, and receive revenues for Information Exchange contracts.

4. Major Alliances

Among those participating in IBM Information Network's IMAP/EDI program are:

- American Business Computer
- American Custom Software
- ACS Network Systems
- Carol Baggerly and Associates
- Computer Task Group
- Louis Wright and Associates
- Metro Mark
- MSA
- Supply Tech

IBM has taken an equity position in AgriData Resources, Inc. (ARI—Milwaukee, WI) and provides IIN in support of the company's network for information retrieval, communications, and network services (including EDI) to serve the unique needs of agricultural companies and commercial farmers.

- ARI clients include agribusiness manufacturers, distributors, dealers, food processors, wholesalers, agricultural bankers, consultants, publishers, educators, industry associations, and governmental agencies. ARI employs approximately 180 people.

IBM is also providing marketing and financial support to Quick Response Services (QRS—Greenbrae, CA) to develop an on-line universal product code (UPC) vendor catalog for the retail and apparel industries. The catalog, available through the Information Network, will be integrated with EDI functions.

- Testing began in mid-1988 and involved 15 retailers and 100 vendors, with commercial service scheduled for early 1989.

- QRS was founded by Peter R. Johnson and Associates, a provider of inventory and financial management software used in retailing. QRS employs approximately 180.

Within Europe, the company has entered several alliances. For example:

- With Fiat, IBM has formed an Italian-based venture called INTESA for trade messaging between manufacturers and suppliers.

- In France, IBM has joined with two French banks and SemaMetra, a computer services firm, to establish a value-added network.

- In the U.K., the company has joined with a group of shipping interests to promote Shipnet services and access to the Tranportel transportation data base.

5. Major Customers

Users of IIN's EDI capabilities include chemical and pharmaceutical companies, textile manufacturers, automakers, medical insurance carriers, and electronics firms.

Within Europe, the company has won a contract with Lloyds of London and other U.K. insurers to provide services similar to those supported in its U.S.-based IVANS network. Additionally, IBM facilities will be used in the reinsurance industry, for a service called RINET.

In electronics, parent company IBM is using the network to communicate with suppliers.

6. Strategies

IBM's EDI sales strategy is to target corporate executives, rather than take a bottom-up approach with IS or functional department management.

EDI is positioned as both "the bridge" between supply and demand, and as an "extended enterprise" application. Company officials often couch EDI capabilities in terms of Interorganizational Systems (IOS) and draw on academic research.

In electronics, parent company IBM is using the network to communicate with its international suppliers in what appears to be a cornerstone for the company's EDI strategy.

- The idea is that once suppliers are familiar with the application, and recognize that many trading partners are also on the network, intersupplier transactions will result.

- However, IBM officials maintain that this aspect is not central to the company's market approach.

In 1986, IBM announced Intercontinental Information Services to link transnational offices in the U.S., Asia, Europe, Africa, and the Middle East through several regional IBM networks, thus positioning the company for international EDI services along with other data processing, office system, and file transfer services.

Also, the company will be using its systems Integration and Professional Services division to provide installation, consulting, and maintenance support.

IBM has also promoted the interactive capabilities of IIN as useful in an EDI environment where just-in-time approaches are necessary.

7. Financials/Market Position

INPUT estimates IIN's 1987 EDI network/processing service revenues at $3 million.

D

Kleinschmidt Inc.

1. Background

Kleinschmidt (Deerfield, IL) traces its origins to the 1913 founding by Edward Kleinschmidt of Kleinschmidt Electric Company, which developed patents for mechanical teleprinting machines, a business sold in the 1930s to Western Electric as the Teletype Corporation.

In the early 1940s, as Kleinschmidt Labs, the company sold hardened teletype and other equipment to the military and railroads. Its railroad sales served as the basis for providing car location and shipper administrative messages (CLM and SAM) to the industry, starting in late 1979.

In the 1950s, the company was acquired by SCM Corporation (NY), an over-$2-billion company involved in chemicals, oil refining, paper, food products, and typewriter manufacturing.

In 1986, SCM was purchased by Hanson Trust PLC, incorporated in the United Kingdom, and by its U.S. arm, Hanson Industries (New York, NY). Hanson is an over-$4-billion industrial management company with subsidiaries in building materials, retailing, electrical and gas equipment, food products, textiles, tools, and industrial products.

After the purchase of SCM, Hanson sold certain operations, including Kleinschmidt, which in December, 1986 was purchased in a leveraged buyout by a management group for $1.85 million in cash and $3.24 million in notes and royalties.

2. Services

Kleinschmidt is one of three companies currently collecting railroad Car Location Messages (CLMs) for shippers (the other two are McDonnell Douglas and Railinc). The company claims it services approximately two-thirds of all firms using third parties for these services.

The company now offers other EDI services in virtually any protocol, as described below.

In addition to EDI and CLM/SAM services for shippers, Kleinschmidt provides parts for its installed base of teleprinting machines, and leases turnkey railroad yard management systems based on Tandem computers. Additionally, the company sells some utility software for Tandem computers.

3. Kleinschmidt and EDI

Kleinschmidt provides EDI mailbox and translator services to a cross section of U.S. and Canadian industries that are primarily in support of shipping information: railroads, grocery and food processing, warehousing, chemicals, petroleum, consumer products, forest products, brokerage firms, distributors, and trucking carriers.

The company receives some transactions from Railinc, at customer request, for enhanced management reports and other advanced services.

- For example, electronic bills of lading in TDCC formats are sent to the railroads, and Kleinschmidt captures the data.

- When a functional acknowledgement is returned, it is enhanced with previously collected information such as the bill of lading number and rail car identification numbers. This information allows the customer to track acknowledgements by car identifications.

Communications are handled by direct-dial or 800 numbers using asynchronous or synchronous communications protocols. Scheduled outcalls are also available, and access is possible through Tymnet.

4. Strategies

This company's approach to EDI can be called "low key." In the past, requests for information have resulted in computer printouts about the company and its capabilities. Now, the company has a laser printer.

The firm claims to be customer driven, and minimizes development efforts that are not directly customer related.

Kleinschmidt is riding the crest of growing interest in EDI, and is benefiting from major railroad incentives being offered shippers to use EDI for bills of lading and other documentation.

Due to its small size, Kleinschmidt says it can pay more attention to a customer's needs and can provide better service than a larger vendor. Officials point to the fact that all employee business cards carry home phone numbers. Kleinschmidt will also recommend that prospects use several vendors to compare service, and also to reduce reliance on one service.

All shares in Kleinschmidt are employee owned, providing performance incentives.

For its translation services, the company works with users that don't necessarily conform to EDI standards in developing a data mapping methodology to convert data into standard EDI formats. Kleinschmidt can accept a customer's existing formats and translate them to public standards. The company claims this approach as a competitive advantage.

5. Financials/Market Position

In 1986, Kleinschmidt achieved pretax profit of $1.2 million on sales of $6.2 million. INPUT estimates the company's 1986 EDI revenues as in the $2-3 million range, with the balance representing turnkey system leasing, parts, and software sales. The company's net assets totaled $1.9 million in 1986.

Kleinschmidt's sales for the year ending December 31, 1987 were approximately $7.7 million, an increase of 23% over the prior year, according to company officials. INPUT estimates Kleinschmidt's 1987 EDI revenues at $4-5 million, with approximately 70% derived from logistics data interchange. This makes the company the fourth-largest EDI service provider.

Sales per employee of approximately $178,000 were reported for 1987, indicating approximately 44 employees.

INPUT believes that Kleinschmidt is one of two EDI services that were profitable at the end of 1987. The company claims to process one billion characters monthly and says that 1987 character count processing increased by approximately 163%, with volume in the first six months of 1988 increasing an additional 35%.

INPUT estimates Kleinschmidt has approximately 400 customers for EDI and CLM/SAM services, with mainline EDI customers exchanging documents with an additional several hundred trading partners on a "no-host" basis, for a total of approximately 500 users.

The company apparently is feeling no capital restraints, despite its employee-owned status. During 1987, Kleinschmidt added two processors, at a cost of approximately $500,000, to its $3 million computer center, which now hosts 6 processors. The company's computer equipment is Tandem Model TXP fault-tolerant systems.

E

McDonnell Douglas Corporation (MDC)

1. Background

In 1984, McDonnell Douglas purchased Tymshare and its VAN, Tymnet. These and other acquired companies were placed in the Information Services Group.

- Until late 1986, EDI was provided by the McDonnell Douglas Electronic Data Interchange Systems Company.
- In 1987, EDI services and MDC's other electronic messaging units were merged into the Applied Communications Systems Company (ACS).
- In early 1988, McDonnell Douglas' EDI group went through another reorganization, putting Telecheck, Payment Systems (credit card authorization), Applied Communications (OnTyme and other messaging), and EDI together under Network Application Services. These groups are believed to be the heaviest users of the company's Tymnet Value-Added Network.

Tymnet serves approximately 65 international access points and over 500 U.S. cities. International access is supported via International Record Carriers (IRCs); however, the company's majority ownership of FTCC (an International Record Carrier) was sold to a unit of Pacific Telecom. There are three national processing centers.

McDonnell Douglas Cyber Data Systems provides professional services for corporate export distribution systems, and for projects such as the New Orleans' Port Authority's CRESCENT system, which links trade participants and government agencies.

2. Services

Among other services, MDC provides the OnTyme E-mail service, logistics data interchange (LDI) information for shippers, and OrderXchange, a remote order entry management and sales communications system for sales representatives and customers to electronically transmit and verify ordering information.

The Information Services Group sells services to vertical and horizontal businesses through focused operating groups, and also provides products and services to other ISG companies.

3. McDonnell Douglas and EDI

The principal EDI service, EDI*Net, was formally introduced in 1983, although the company has provided logistics data interchange services since 1981. EDI*Net supports mailbox and outdial services, using TDCC, X12, international GTDI (a precursor to EDIFACT), and UCS standards.

No-log-in service is provided in accordance with UCS (grocery) standards. This permits noncustomers to access EDI*Net customers who are trading partners through the network. Subscribers pay the charges. Grocery users can trade with partners using Sterling Software's Ordernet through internetworking.

MDC's logistics data interchange services are:

- MDC-Trace, which traces motor and air carrier shipments, thus permitting carrier performance analysis, improving inventory control, and helping to expedite shipments.

- Data Collection, which provides air, rail, and motor shipment status messages, a method of collecting inbound and outbound shipment status messages from carriers.

  - The rail data collection service uses Shipper's Assistance Message (SAM) service provided through a dedicated line from Railinc, as well as information from railroads not on the SAM system.

  - The rail service also provides Car Location Messages (CLMs), Car Location Inquiries (CLIs), and Car Location Updates (CLUs) for tracing containers, piggy-backs, and rail cars.

  - Rail service is part of Railtrack, a component of Tymshare's Rail Fleet Management Services. Railtrack merges user and railroad data into an on-line data base to provide shipment status and other information.

  - Railtrack provides physical car tracking, mileage accounting (to resolve report discrepancies and to handle mileage credit recovery), bad-order analysis (to analyze trends in bad-order incidents by leasing companies and carriers), route analysis, mileage reporting, and audit services (a joint venture with Freight Rate Service Company of Kansas City, MO, which invoices separately).

These logistics services are being examined with a view to retarget the prospective market beyond traditional users of this information, and as part of a systems integration strategy.

4. Major Alliances

In late 1986, a joint venture with British Telecom for EDI services in the United Kingdom was abandoned by both firms, citing their belief that the market had not developed as expected. However, INPUT believes the venture failed due to fundamental cultural differences between the companies, and marketing/sales problems.

In late 1987, the company's Japanese affiliate, Network Information Service, Ltd. (NIS), linked with Tymnet for a direct connection to the Japanese VAN. Tymnet shares controlling interest in NIS with Marubeni Corporation, a trading company.

5. Major Customers

EDI*Net clients are predominantly in the transportation, grocery, electronics, telecommunications, aerospace, oil, and warehousing industries. Included are units of McDonnell Douglas Corporation.

6. Strategies

One part of MDC's strategy is apparently Systems Integration work, to include EDI services for divested, merged, and leveraged buyout companies with a need to integrate diversified systems.

In 1986, the company announced plans to upgrade its central processors from IBM 4341s to Tandem fault-tolerant computers.

- The company was scheduled to release EDI Version 2.0 in mid-1987, with plans to convert all customers to the new system, called EDI II, within one year. However, this schedule proved overly ambitious, with the project now delayed over 18 months.

- When implemented, the new architecture will support EDI services such as transaction totalling, extensive management reports, and detailed billing, and will improve response times.

MDC officials report work to licence the company's new EDI technologies to international public telephone and telegraph agencies (PTTs), with

the goal of providing gateways to the U.S. service for international EDI applications. This plan has apparently not been successful, in part because of development delays.

Tymnet's domestic presence is expanded through links with Local-Area Data Transport (LADT) services provided by telephone companies. Specifically, Southern New England Telephone's ConnNet, and Bell Atlantic's Public Data Network interconnect with Tymnet.

MDC earlier distributed PC-based EDI translation software, an activity now discontinued.

- The company found that only 5% of its EDI traffic could be attributed to software it distributed. Instead, the company has a software certification program that recommends packages to clients and prospects.

- This software approach has created de-facto agents with software companies bringing EDI clients to the service. EDI*Net ran a promotional campaign offering for a limited time to waive service charges for new clients using certified software.

7. Financials/Market Position

In fiscal year 1985, ISG reported nearly $110 million in losses, on revenues of $1.1 billion (a revenue increase of 13%). This performance was blamed on industry sluggishness and adjustments for corporate reorganizations. Plans for new services were delayed, a manufacturing operation was closed, new executives were named, and workers were laid off.

- INPUT believes cost cutting reduced the company's EDI marketing investment and caused McDonnell Douglas to lose sales momentum.

For the first three quarters of 1986, ISG reported continuing losses of over $75 million, due to rapid amortization of the costs of acquiring other information systems companies, and to the continuing computer slump.

In the fourth quarter of 1986, the Information Services Group had its first pretax profits since establishment, with earnings of $5.6 million compared with a $22.9 million loss for the 1985 quarter.

ISG's total 1986 revenues were $1.2 billion, with losses of nearly $70 million reported for the year.

ISG's 1987 revenues were reported at $1.24 billion, with losses of $42.3 reported. ISG officials believe they will become profitable in 1988. INPUT believes that in the first six months of 1988, performance has not yet met expectations.

INPUT estimates MDC's ISG 1987 information service revenues, after backing out sales from computer sales and service, at approximately $1.1 billion, with half from networking and processing services.

INPUT estimates MDC's 1987 EDI revenues at $6.5 million and, except for R&D expenses, the unit would be marginally profitable.

As of the end of 1987, MDC claimed 600 companies for EDI services as MDC subscribers, and an additional several hundred accessing services through no-log-in service.

- The company has approximately 1,000 user mailboxes dedicated to EDI; however, many of these are in distributed purchasing environments within the same company, some are in production, and others are test mailboxes.

- MDC officials also note that there are resellers of their EDI services who receive a single invoice and therefore the actual number of customers is somewhat larger than the reported 600.

8. Comments

EDI*Net's plans for upgrading facilities have been delayed, and customers have complained about response time problems.

Although the company has a Canadian sales office and some Canadian customers in grocery, MDC is not viewed as a major competitor in that market.

Rumors that McDonnell Douglas' ISG or portions thereof are for sale have repeatedly made the rounds. The most intensive users of Tymnet *might* have been grouped to facilitate divestiture, although there are operational and marketing reasons for this reconfiguration.

With a five-year EDI history, it is difficult to understand the apparent lack of profitability in the EDI component of McDonnell Douglas.

- Certainly reorganizations have affected morale, and difficulties in other units of the Information Services Group may have diverted resources needed for market development.

- Additionally, the company's logistics services are in a relatively flat marketplace; accordingly, slower growth than would be experienced in mainline, purchasing-oriented EDI services can be expected.

F

Sterling Software Ordernet Division

1. Background

Sterling Software (SSW) is essentially a holding company for eight information service businesses. The company has over 5,000 customers, including 85 of the Fortune 100, over 80 of the 100 largest U.S. commercial banks, and numerous government agencies.

In August, 1985 SSW purchased Informatics General, a 23-year-old processing, professional services, and software vendor (Columbus, OH), for $126 million.

Informatics provided Ordernet EDI services to several industries, and the Ordernet division is now part of Sterling Software's Information Services Group.

2. Services

Ordernet's primary focus is on EDI services and, more recently, EDI software. Turnkey systems for various retail and distribution environments are available from other units of SSW.

Sterling Software also developed the initial service offering for International Health Information Applications, Inc., which provides information on pharmaceuticals, and creates a data base of drug usage through data capture and retrieval procedures applied to EDI traffic, as well as from data submitted by the companies participating.

- Called Medimetrik, the service reports aggregate data but protects personal and proprietary information.

- Pharmaceutical companies can access the Medimetrick data base for market research and sales management purposes.

- The technique is also being applied to veterinary medicine, and Ordernet is also involved in tracking drug purchases for mainland Chinese hospitals.

3. Sterling Software and EDI

Ordernet traces its EDI involvement to 1975 when Informatics General began Comm-Net EDI services to the wholesale pharmaceutical industry. Currently, Ordernet serves several additional industries using both industry-specific formats and ANSI X12 standards.

These industries tend to be clustered around grocery, hardware and housewares, medical/surgical distribution, and service merchandising.

The American Hardware Manufacturers Association (AHMA) chose the company to provide the EAGLE automated purchase order entry system, which now functions as part of Ordernet. Operations and marketing were originally handled under a licensing agreement with AHMA subsidiary American Hardware Data Systems, Inc., which managed system funding, development, and testing.

Electronic transmission of hospital chargebacks (rebates) between wholesalers and pharmaceutical manufacturers is available, using the three National Wholesale Druggists' Association (NWDA) formats:

- Bid Award Notification to Wholesaler.
- Chargeback Debit Memo to Manufacturer.
- Chargeback Reconciliation to Wholesaler.

Auto-Comm for the U.S. auto industry supports ordering and supply documents.

EDI-UCS service is for the grocery industry, and Ordernet supports internetwork traffic with McDonnell Douglas' EDI-Net, at no additional user cost. Other internetwork agreements have been established with Kleinschmidt, GEIS, and Control Data Corporation.

DOE (Direct Order Entry) service is provided to service merchandising companies, warehousing service is supported using WINS standards, and the company is expanding into logistics areas.

Translation between X12, UCS, and industry-specific standards is available through the GENTRAN in-network translation service.

Communications, supporting most devices, is primarily handled through toll-free numbers, although now Ordernet may also be accessed via Telenet.

As of mid-1988, the company was testing SNA communications using the SDLC protocol, and planning to provide PC and mainframe software that can access Ordernet under this protocol.

Ordernet offers a media conversion service that permits electronic documents to be converted to hardcopy (EDI/LaserMail(sm) for mailing) or to facsimile transmissions (EDI/FAX (sm) for delivery to a recipient's FAX machine). This conversion allows a company to operate in a wholly electronic environment, cut costs and reduce clerical activities, and obviate the need to concurrently use both electronic and paper documents.

4. Major Alliances

In 1987, the company signed a resale agreement with Telenet Communications Corporation (Reston, VA), whereby Telenet would private-label Ordernet's processing service and distribute it to Telenet's Fortune 500 customers. The resulting service, called TEDI, is described in Telenet's profile in Chapter III.

In early 1988, Ordernet acquired the customer list of Canadian EDI service provider Crowntek, potentially adding nearly fifty new accounts to its base of sixty in Canada. However, INPUT believes only a few of these referral accounts were actually won by Ordernet. Crowntek decided to sell this business as part of a divestiture plan by its parent firm, Crownx (see Chapter V).

Since July, 1987, Canadian company Management Horizons Data Systems (London, Ontario) has been marketing Ordernet products and services in that country.

5. Major Customers

Ordernet provides EDI services for most major companies in their targeted segments, and at the end of 1987 had approximately 750 customers.

In 1985, the company completed a software development project for the Department of Defense, automating all U.S. Army commissaries in

Europe and the Near East. In late 1986, the Air Force Commissary service began pilot testing of UCS standard communications through Ordernet, with plans for 140 locations to communicate with military brokers.

6. Strategies

Ordernet claims to be market-driven. Accordingly, through continual monitoring of industry practices and needs, and through its users' groups, it seeks to anticipate market demands.

- The company claims to host the largest user group meeting offered by any EDI service provider, with a wide variety of workshops and industry participants.

- In addition to its closeness to users, the company sponsors "Executive Seminars" to educate managers on the benefits of EDI.

In 1987, Ordernet expanded its X12 EDI services to support all current transaction sets, in addition to the industry-specific standards supported earlier. This action was taken to broaden service to an industry cross-section, and to provide X12 services to current customers expanding their EDI capabilities with suppliers and distributors.

Sterling Software's stated corporate strategy is to select market niches offering high growth potential; acquire successful businesses providing services and products to those niches; group them by target markets; give them marketing, financial, and management support as needed; and help the units maintain their autonomy as a way to keep them productive.

- Sterling Software became the company it is today through acquisitions. Although company officials state that Sterling will pursue large acquisitions, no major acquisitions have been made since the purchase of Informatics General.

- There had been published speculation of an intention to purchase Control Data Corporation; however, the stock market decline of October 1987 led the company to decide on a stock buyback program.

- It is possible the acquisition strategy will be applied in the EDI arena to strengthen current markets or gain entry into new ones, as has been illustrated with the Crowntek customer list purchase.

7. Financials/Market Position

Due to its relatively early market entry, Sterling Software holds a significant portion of the EDI service market based on numbers of customers. In 1987, the company attained the second market position, and claims dominance in the grocery EDI market.

The company claims growth of 45%-70% over the last five years in EDI services. For fiscal 1987, the company reported a 45% increase in revenue, including 60% growth in new contracts, and a 25% increase in actual EDI usage by its customers. Based on previously published information, INPUT sizes Ordernet's calendar 1987 revenues at $7 million.

8. Comments

SSW Ordernet is pondering ways of growing its EDI business even faster than the reported annual 45%.

There have been attempts to leverage the company's services in various segments. For example, services in the warehousing industry are a natural extension of services to whole distributors and retailers. The company's presence in the hard-goods area has been leveraged into services in the service merchandising class of retailer. However, a hospital ordering program has been under development for several years.

As of mid-1988, the company was reportedly negotiating for services to a major international transportation firm, a relationship that, if consummated, could lead to logistics and other types of EDI services in the Pacific Rim and South America.

G

TranSettlements, Inc.

1. Background

TranSettlements (Atlanta, GA) is an EDI communications and software provider supporting ANSI X12, TDCC, and other standards. It was established in 1977 as a subsidiary of Transus (formerly Georgia Highway Express), a family-owned company.

2. Services

TranSettlements is the major EDI service provider to the motor transportation industry, with TranSend services used by trucking companies,

major shippers, and service organizations in the industry. The company is also a market leader in mainframe EDI translator software products and provides professional services.

3. TranSettlements and EDI

TranSettlements traces its EDI involvement to the 1979 introduction of an EFT automated payment transfer service, followed by an electronic invoicing service (using proprietary formats) in 1982, and freight invoicing using TDCC formats in 1983.

TranSend now handles freight bills, bills of lading, and remittance notices (which can be sent directly to payment centers), as well as other EDI transactions.

EDI processing is handled through a computer center operated by a unit of the American Trucking Association.

Communications are handled through dial-up WATS lines, with most protocols supported. VAN access is not currently available.

4. Major Alliances

TranSettlements is a primary provider of freight payment EDI transactions to the First National Bank of Boston's freight payment service.

The company provides EDI and other software consulting. Its mainframe EDI software (TranSlate) was first introduced in 1982 and in late 1986 was licensed to Management Sciences of America (MSA—Atlanta, GA). Subsequently, the software has been enhanced and ported to additional computer platforms, and there are several joint-marketing or referral agreements in place.

TranSlate software is being used by Martin Marietta Data Services in support of the U.S. Government's General Services Administration pilot EDI program.

The EDI software market is covered in greater depth in a companion INPUT report.

5. Major Customers

TranSettlements EDI service customers include approximately 20 motor carriers, 15 shippers, and service organizations. The company claims users in the automotive, transportation, steel, chemical, pharmaceutical, food, banking, textile, and retail markets.

- Among transportation companies using the service are St. Johnsbury Trucking, Transcon Lines, Watkins Motor Lines, and Yellow Freight System.

- Services connected to the service include the First National Bank of Boston, Numerax, and Traffic Data Systems.

- Major shippers using TranSettlements are Ford Motor Company, Proctor and Gamble,
  K-Mart, DuPont, and Chemical Leaman.

Transportation carriers can use TranSend for interchanges between the various types of transportation (e.g., rail-to-air or other intermodal communications), often through internetworking with Railinc and Kleinschmidt Computer. Additional interconnects are in place for other forms of EDI services.

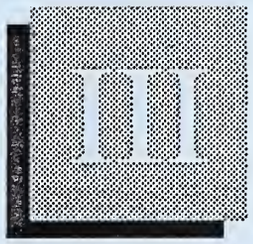
6. Strategies

TranSettlements maintains an active users group that provides suggestions on its products and services. However, the company's focus appears to be on EDI translator software rather than network services.

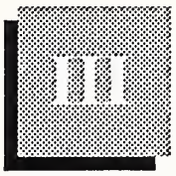
7. Financials/Market Position

TranSettlements' parent firm (Transus), is privately held, with estimated 1987 revenues of $150-180 million.

INPUT estimates TranSettlement's 1987 EDI revenues at $1.2 million.



Recent EDI Market Entrants



Recent EDI Market Entrants

Several companies have entered the EDI marketplace in the past year. In one case, Baxter-Travenol's ASAP*Express, a closed, single-vendor system has been opened by adding additional sources of medical and other supplies to the network.

This chapter examines the apparent strategies of these recent additions to the EDI network services marketplace.

A AT&T

1. Background

AT&T, now shorn of its regional Bell Operating Companies, maintains businesses in telecommunications and computing equipment, network services, and professional services.

2. AT&T and EDI

AT&T formerly offered an EDI service called Information Interchange as part of the Net 1000 packet-switched network/remote computing service. Net 1000 was withdrawn in June, 1986 as not meeting profit objectives.

In mid-1988, AT&T announced its intention to re-enter the EDI network services business, supporting the application on its X.400-based E-mail service, AT&T Mail. Services are to start in early 1989, and a service in Japan is also under development.

AT&T's new EDI offering is in testing with various AT&T corporate units.

3. Major Alliances

AT&T has signed agreements with the software firms Supply Tech and TranSettlements, enabling AT&T to present a full solution to prospects for its new EDI service.

AT&T is partnering with several Japanese firms in developing Enhanced Network Services (ENS), a Japanese Value-Added Network.

AT&T Mail connects with Telecom Canada's Envoy 100 electronic mail, and can also link with Digital Equipment Corporation's All-in-One office system. Additional X.400-based links are planned, which presumedly will support EDI internetworking.

In 1988, AT&T announced a contract with apparel manufacturer Levi-Strauss to develop turnkey retail systems and optional network services to extend Levi's LeviLink services, which include EDI, to smaller retailers.

- GE Information Services had originally worked with Levi-Strauss on the project, and maintains a large portion of the networking business.

- The Levi-Strauss service, called RIVET (for Retailers Inventory Valuation and EDI Transmission program), has built-in EDI capabilities but principally handles inventory control, accounting, purchasing, and sales analysis.

- If EDI is desired, initially transactions would take place through AT&T; however, retailers do have an option of choosing another network after the service is initiated.

AT&T also maintains an EDI presence through a relationship with Control Data's Redinet. Redinet uses Accunet facilities as a tariffed service.

4. Strategies

AT&T has stated its intention to interconnect with other EDI networks, ideally taking advantage of the X.400 basis of its service, and has said it will structure its pricing schedule to avoid double-charging for internetworking.

AT&T has packaged its EDI offerings and expertise, even during the hiatus when it had no clear service, under what it calls Electronic Order Exchange (EOE). EOE describes on-line order entry systems and EDI applications. The primary activity of this program has been market education.

5. Comments

AT&T's market re-entry is a result of customer interest in the vendor's potential as a service provider.

AT&T will likely have a technologically advanced EDI service. Its E-Mail product, though not widely used, offers rich features, including text-to-voice conversions via touch-tone commands.

However, technology alone will not guarantee success, as the company learned with the Net 1000 experience. Also, it remains to be proven that the company can maintain flexibility in responding to market demands in light of its bureaucratic structures.

B

Automatic Data Processing, Inc. (ADP)

1. Background

ADP (Roseland, NJ) was formed in 1949 as Automatic Payrolls, Inc.; the name changed in 1960. Since the early 1960s, the company has been diversifying through acquisitions; however, a major share of its revenues is still derived from payroll services.

2. Services

In addition to payroll services, the company provides RCS and distributed processing services to banks and other financial institutions, supplies on-line data bases, supports collision estimating for the insurance industry, and has services for automotive dealers.

ADP's Network Financial and Communications Service group provides remote and on-site distributed processing though the Autonet VAN.

3. ADP and EDI

In a sense, ADP is already applying EDI in several areas.

- For example, in payroll services, a small number of its national accounts currently use ADP-supplied PC software to prepare data for transmission to the service. Such interconnections are growing at over 50% annually, and ADP's research surveys indicate that half of its national accounts will handle payroll processing in this way by 1992.

- There are other areas where business information is communicated in an EDI fashion, such as communications between auto dealerships and manufacturers.

In "mainline" EDI, ADP is newly evaluating several options. As of mid-1988, the company was beta testing an industry-specific service with an associated EDI/EFT implementation. The service is believed adaptable to additional industries.

ADP has also added new applications to its RCS offerings that are inquiry and sales oriented and will likely incorporate EDI. Its existing applications in distribution and manufacturing will probably be enhanced with EDI.

ADP is believed to be developing a distributed processing EDI service that places a processor on the customer's site. The processor is linked to the network and can then be polled for EDI traffic. Due to pre-processing, batch, and possibly compression capabilities, this configuration can offer low costs for volume users. This product/service would be part of, or similar to, ADP's On-site distributed processing services.

4. Major Alliances

EDI/EFT in the beta test is being provided through Pittsburgh National Bank. ADP has received nonexclusive endorsements from at least one industry association for its EDI service.

5. Major Customers

ADP's beta testing is with a group of approximately 20 manufacturers, distributors, and buyers in an undisclosed market segment. It received an endorsement from an electronics distribution association; however, the beta is not in electronics.

6. Strategies

Working with some of its customers, the company has identified previously unaddressed areas where EDI can be efficiently applied, and value-added services can be added, by ADP, users, or other sources. Accordingly, ADP will likely target an industry niche for its initial EDI offering, customizing and adding value to basic services.

Company officials indicate that optimally, ADP would like to see a customer fully integrate EDI with ADP-supplied applications and services; however, other applications could be integrated using tools provided by the system.

It is likely that ADP's EDI service will combine interactive inquiry functions with batch transmission capabilities to provide a flexible, integrated service adapted to specific industry needs.

- ADP officials indicate that some of their prospective customers are currently using interactive systems for inventory checks and stock reservations and, for them, a move to a batch EDI approach would be "a step backward."

It's unlikely ADP will offer on-network translation, the company believing that the cost of EDI software is sufficiently low that this function should take place on the customer's premises.

ADP will likely use its existing sales force to market the new EDI service to mid-sized and smaller companies, as the company's client base tends to fall in the $3-million to
$50-million range.

7. Comments

ADP has a reputation for being conservative in its approach to new technologies, preferring to stay with proven techniques. However, the corporate mission statement says ADP will work on the cutting edge of technology.

ADP's apparent EDI approach involves a creative melding of basic and value-added services with adapted, distributed technologies to differentiate ADP's service and to develop new niches for EDI that can then be exploited with added value in the initially targeted industry, and then leveraged into other segments.

8. Financials/Market Position

ADP's annual revenues are over $1 billion; however, as the company has not formally announced its EDI service, it has no revenues from this source.

C

Baxter-Travenol's ASAP

1. Background

The classic captive hospital ordering system is operated by Baxter-Travenol, which purchased American Hospital Supply, a manufacturer and distributor of medical equipment. Baxter provides a variety of information services and products; however, this profile will focus on its EDI activities.

2. Services

Baxter offers the ASAP (Analytical Systems Automated Purchasing) private EDI system, which allows customers to use terminals, touch-tone phones, portable terminals, bar code scanners, and processors of all sizes to enter orders.

- Over 500,0000 products are available to some 6,000 customers. Messages and special requests can be sent to customer sales representatives. The system can translate between a customer's stock numbers and Baxter's order numbers, and can provide sorting and customized management reports.

- Optionally, the system can automate ordering with the ASAP computer, compiling a list of recommended purchases for electronic approval.

3. Major Alliances

Baxter-Travenol, working with GE Information Services, is opening this "closed" system to other suppliers, allowing purchasers to buy from multiple sources through the same conduit.

- The new service is called ASAP*Express, in keeping with GE's series of EDI*Express services.

- In most cases, orders are routed through Baxter's computer center and then placed in mailboxes on the GE network.

4. Strategies

To allay suppliers' fears that information might be used competitively by Baxter, the company has commissioned an accounting firm to review system security. A resulting report is given to suppliers considering an affiliation with ASAP*Express.

5. Comments

It should be noted that other network service vendors and suppliers are attempting to address this niche market with a variety of multivendor approaches.

- In 1988, McDonnell Douglas certified the medical industry's Material Management System as compatible with EDI*Net.
- Sterling Software Ordernet division appears to have pulled back from its planned HOP (Hospital Ordering Program) development.
- IBM has a relationship with Abbott Labs' QuickLink multisupplier system, in an offering called the Corporate Alliance.
- Johnson & Johnson offers Cooperative Action (COACT) Plus, introduced in 1987.

Although the best-known EDI implementations in electronic hospital purchasing are captive systems as the ASAP*Express service illustrates, these are being opened by their owners to support multivendor purchasing.

The competitive advantage of being the first such system has now decreased with several electronic ordering systems in place. Baxter is seeking to retain revenues by being a conductive agent for hospital ordering.

D

Compuserve Incorporated

1. Background

CompuServe (Columbus, OH) was formed in 1969 and acquired by H&R Block, Inc. in 1980.

2. Services

CompuServe's Network Services is a VAN available to corporations, government agencies, and financial institutions with access in over 200 U.S. cities and in 196 countries via IRC gateways. Additional access is possible through other VANs.

Services are oriented to both consumer and commercial accounts. Its target markets are hobbyists, the financial community, and POS credit card processing firms (VISA and seven others). The company claims over 400,000 subscribers.

In addition to POS services, other services include electronic mail, on-line data bases, shopping services, airline ticket reservations, and financial services, including economic analysis, discount securities trading, home banking, and international funds transfer for overseas credit union members.

The EasyPlex (consumer) and Infoplex (business) electronic mail services and MCIMail were linked in early 1986.

3. CompuServe and EDI

CompuServe has been providing private EDI networking for its customers, and introduced its general EDI service in February, 1988 in response to customers' demands for a system supporting public standards.

In addition to providing on-network translation services and supporting a range of communications speeds and protocols, CompuServe can provide standards compliance checking and content audits (on a customized basis) that recognize values in specific fields, and reject or accept documents based on specified ranges.

Another feature of the EDI service is a menu-driven, customer-controlled set-up and account management function that allows users to register new trading partners, specify billing splits, modify communications parameters, and control other features.

Under contract with the U.S. Commerce Department, CompuServe is offering a service for electronic export license applications.

- This service works with either a stored template that the applicant fills in on-line, or multiple applications can be prepared offline and submitted together.

- Commerce licensing officers then process the forms, and reply electronically. However, the validated license is sent to the exporter as hard copy.

4. Major Alliances

CompuServe has an agreement with Computer Sciences Corporation (El Segundo, CA) for CSC to market CompuServe's services (principally financial data bases) overseas. It also has an agreements with two Japanese firms (Fujitsu and Nissho Iwai) to provide international services between Japan and the U.S., such as financial market information exchanges. These relationships may be leveraged into international services.

CompuServe's internetworking with MCIMail may also serve as a platform for extending the reach and market presence of its EDI offerings.

5. Major Customers

CompuServe's offering was introduced in early 1988 and therefore it has few users. SunHealth Corporation (Charlotte, N.C.) uses CompuServe's network for its Buyline hospital purchasing system that links SunHealth to medical and office supply companies including AAroc, Unijax, AOA/CHICK, and Calgon/Vestal.

6. Strategies

CompuServe intends to use its 150-member field staff in 31 branch sales and support offices as system consultants, many of whom are capable of programming customized interfaces.

CompuServe is jointly conceptualizing its EDI, E-Mail, and other on-line services as "Interchange" and apparently intends to provide several to its accounts, rather than focus on EDI as a discrete service.

Additionally, the company may highlight its asynchonous communications abilities as a way of targeting smaller and midsized companies for its EDI services.

7. Financials/Market Position

Fiscal 1987 year revenues (ending April, 1987) for CompuServe totaled nearly $103 million, an increase from nearly $85 million the year before.

Revenues for the nine months ending January 31, 1988 were $96 million, a 28.5% increase from the nearly $75 million reported for the same period a year previously.

CompuServe has approximately 750 employees and claims more than 1300 large corporate users, in addition to individual service subscribers.

Because CompuServe's EDI service was introduced in 1988, no revenues are reported for 1987.

8. Comments

CompuServe's strengths in asynchronous communications may work to gather
low-volume, smaller accounts to its EDI services. Accordingly, a bundling of services will be necessary to establish account profitability.

When the opportunity and need arises, its 350,000 hobbyist subscribers may look to the company, out of "brand loyalty," as the network of choice for EDI. Its continuing 1300+ commercial accounts may also view the offering in this fashion.

E

Harbinger Computer Systems

Atlanta-based Harbinger Computer Services was formed in October, 1983. Its main product is a PC package for smaller businesses to review their bank accounts and perform cash management functions via PCs.

In mid-1988, Harbinger introduced InTouch*EDI, an integrated PC software and network service for smaller companies to participate in EDI with their larger trading partners.

- Network services start with a $10 monthly subscription and transaction charges, described as competitive with others.

- Harbinger says the software avoids direct user interfacing with the complexities of the ANSI X12 codes, which may confuse and discourage neophyte companies from using EDI.

A major user of Harbinger's network service is Atlanta's Georgia Power Company, which applies EDI to its procurement functions. Another user is said to be Westinghouse.

Harbinger's marketing strategy does not support a long sales cycle. Rather, the company holds trading cluster seminars and attempts to sign users immediately by offering easily installed software and flat-fee network services for a trial period.

F

Martin Marietta Data Services

1. Background

Formed in 1970, MMDS (Bethesda, MD) is essentially the IS department of the Martin Marietta Corporation. MMDS provides services in support of the parent firm's contractual work, and offers a variety of information services for both government and commercial accounts.

Martin Marietta is a Fortune 100 company known for activities in aerospace, information management, communications, and energy systems. Among its many governmental contracts are:

- Several programs supporting NASA projects.
- Managing the Federal Aviation Administration's Air Traffic Control modernization program.
- Development and installation of the U.S. Navy's Pay and Personnel Administration project.
- Installing a complex local-area network (LAN) for the U.S. Military Academy at West Point.

Nongovernment projects include:

- Managing NYNEX's data center Pearl River, New Jersey.
- Development and installation of integrated computer systems supporting London's "underground" subway.

2. Services

MMDS provides a range of services in customized programming, training and education, computer-integrated manufacturing, facilities manage-

ment, and network services. Hoskyns of the U.K., a leading systems integrator, is a division of MMDS.

The company has handled projects in manufacturing, distribution, finance, and general business.

Its facilities include three data centers, with the Orlando host facility the central hub of operations. The company also operates a large, private international network.

MMDS claims nearly 6,000 employees in 60 U.S. cities and 30 countries.

3. MMDS and EDI

In addition to being a provider of EDI for its parent firm, MMDS appears to be positioning for commercial market services.

However, the company's focus has primarily been on the federal government's use of EDI, with a pilot project in place with the General Services Administration's Federal Supply Service.

- The project uses MMDS's networking and teleprocessing facilities for a prototype purchasing system applied to federal agency furniture purchasing.

- The project supports the X12 standard, and uses TranSettlement's TranSlate software running on MMDS's host, the first instance of this package being offered in a time-sharing environment. TranSettlements reports a marketing agreement with MMDS to sell this software.

MMDS also provides EDI-like processing for customers of Shipnet Systems Inc. (Glen Ellyn, IL), which matches shippers and trucking carriers. ShipNet is described in Chapter VIII.

4. Major Customers

MMDS claims 4,000 commercial and government customers worldwide. Its only EDI customers appear to be the GSA and ShipNet.

5. Strategies

MMDS' overall marketing approach is to "custom-fit" an information services solution to its customer.

MMDS has, to date, been taking a low profile toward the commercial EDI marketplace.

- The company offers little pricing or service literature, instead tailoring its offering in response to specific customer needs.

- Company representatives indicate the firm will provide network/ processing service, on-network translation, and EDI software, and that the units responsible for commercial and federal accounts are being coordinated to address attractive opportunities.

The company is also shifting its attention toward noncaptive business opportunities, acknowledging a trend by aerospace-company-owned information service firms to pursue commercial accounts.

G

Telenet Communications Corporation

1. Background

Telenet (Reston, VA) is part of U.S. Sprint (formed jointly by GTE and U.S. Telecom). It is the largest and, INPUT believes, the most profitable value-added network, largely due to its provision of private networks.

Telenet has installed approximately 100 private networks and supports 2,000 virtual private networks that share facilities with other Telenet users.

Telenet has access points in approximately 350 U.S. cities and overseas connections in 55 nations through PTT and international record carrier (IRC) facilities. Telenet itself is an IRC and, as such, can provide end-to-end packet services through agreements with international networks that are primarily PTTs.

An additional 110 access points are being added to the network in 1988 after delaying expansion in 1987 due to uncertainty over the FCC's proposed access charge plan for VANs.

Exhibit III-1 shows international access to Telenet.

EXHIBIT III-1a

TELENET INTERNATIONAL ACCESS

COUNTRY	SERVICE PROVIDER	NETWORK
Argentina	ENTEL	
Australia	Telecom Australia	AUSPAC (domestic
	Overseas Telecommunications Commission	MIDAS (international)
Austria	Radio-Austria A.G.	DATEX-P
Bahamas	Batelco	
Belgium	Regie van Telegrafie en Telefonie	DCS
Brazil	Embratel	Interdata and Renpac
Canada	Telecom Canada Teleglobe Canada	Datapac Globedat
Chile	ENTEL	ECOM
Columbia	Empresa Nacional de Telecommunicaciones	
Peoples Rep. of China	Beijing Telecommunications Commission	
Denmark	PTT	Datapak
Finland	General Directorate of Posts and Telegraphs	Datapak
France	Direction des Telecommunications des Reseaux Extérieurs	Transpac

EXHIBIT III-1b

TELENET INTERNATIONAL ACCESS

COUNTRY	SERVICE PROVIDER	NETWORK
Norway	Norwegian Telecommunications Administration	Datapak
The Philippines	ETPI Philippine Global Communications	
Singapore	Telecommunication Authority	Telepac
South Africa	Postmaster General	Saponet and Transnet
Spain	Compañía Telefonica Nacional de España	TIDI and Iberpac
Sweden	Stockholm Telecommunications Administration	Telepak
Switzerland	Suisse PTT Radio Suisse	Telepak Datalink
Taiwan	International Telecommunications Administration	
Thailand	Communications Authority	
United Arab Emirates	Emirates Telecommunications Corp.	Tedas
United Kingdom	British Telecom	International Packet-Switched Services (IPSS)

Plus Additional Access Via IRC Connections

EXHIBIT III-1c

TELENET INTERNATIONAL ACCESS

COUNTRY	SERVICE PROVIDER	NETWORK
West Germany	Deutsche Bundespost	Datex-P
Greece	OTE Athinai Telex	Helpak
Hong Kong	Cable & Wireless Ltd.	Intelpak (International Gateway)
	Hong Kong Telephone	Datapak (Domestic)
Ireland	PTT	Eirpac IPSS
Israel	Ministry of Communications	Isranet
Italy	Italcable	Dardo and Itapac
Japan	NTT KDD	Venus-P
Korea	Data Communications Corporation of Korea	
Luxembourg	Centre des Telecommunications	Luxpac
Malaysia	Telekom Malaysia	Maypac
Mexico	Secretaria de Communicaciones y Transportes	Telepac
Netherlands	PTT	Datanet-1
New Zealand	Post Office	Pacnet

2. Services

In addition to supporting a variety of VAN services such as access to on-line data bases, Telenet supports the Telemail E-mail service that has direct connections to Telecom Canada's Envoy, the first link between electronic mail systems, and to Japan's Acemail service.

- Additional E-mail links are installed or planned with Australia (Telememo), Belgium (DCS Mail), Italy (Itamail), Norway (Teleboks), Sweden (Telebox), and Taiwan (Pipmail).

- The Telemail International Licensees Association was formed in late 1987 to promote E-mail and other forms of exchange services (including EDI), and interconnectivity via X.400 standard gateways.

As described in Chapter VII, Telenet is providing networking, and host processing service for the iNet America joint venture being established with Telecom Canada, which Inet America officials say will offer EDI.

Telenet has internetwork connections with several Bell Operating Company (BOC) packet networks: Bell South, Southwestern Bell, and Bell Atlantic.

3. Telenet and EDI

Telenet is private labelling and reselling Sterling Software's Ordernet services in an agreement currently limited to Telenet's Fortune 500 accounts. The service is called "TEDI" for Telenet EDI.

Telenet's EDI agreement with SSW apparently does not include provisions for Telenet to offer international EDI. However, since its accounts include Multinational Corporations (MNCs), and since its messaging strategy is global in nature, the agreement may soon be tested due to customer demand.

The links between Telecom Canada's Envoy/iNet services and Telenet presently do not support EDI, a functionality that may be added due to customer demand for trade with Canada as the effects of the recently agreed free trade agreement lead to more intercountry commerce.

4. Major Alliances

Telenet's major alliance is the one that provides it with EDI capabilities: Sterling Software. The company also markets EDI software from TranSettlements and EDI Inc., and, as noted, interconnects with several BOC packet networks.

5. Major Customers

Telenet's TEDI service first went live in early 1988. Customers include Ball Corporation and Southern California Edison.

6. Strategies

Telenet's EDI strategy is focused on marketing services to the Fortune 500.

The company has embraced the X.400 message-handling standard as a means of interconnecting disparate systems. It has also licensed its E-Mail software to multiple international PTTs and service providers, facilitating international linkages. Nevertheless, international EDI services are not currently provided.

EDI is seen as an adjunct, or as a member of the electronic messaging family of services offered.

The company's interconnection with BOC packet networks extends its reach for VAN, and presumedly EDI services, and will likely be differentiated from its public VAN offerings by the level of network management.

7. Financials

Telenet had been profitable since 1983, although revenues are not separately reported by U.S. Sprint or, earlier, by GTE. In mid-1988, GTE sold a significant part of its
joint-venture holdings in Sprint to its partner United Telecom. While Sprint's long-distance interexchange services continue to lose money, Telenet has been profitable.

Since EDI services were not offered until January, 1988, no revenues from this source are reported or reflected in the market sizing.

8. Comments

Telenet has taken a conservative approach by remarketing another company's service, rather than by developing its own. This limits its risk, and obviously its research and development costs, but also limits its profit margins. Therefore, a Fortune 500, high-volume strategy is needed for the company to make money from EDI.

The company's membership in the family that includes long-distance telephone carrier Sprint may limit the resources the company can apply to developing its EDI services. A merger with the leading alternative carrier, MCI, has been speculated on. Such a merger, if actualized, could lead to consolidation of data networks.

H

Union Pacific Technologies (UPT)

This St. Louis-based unit of the railroad was formed in May, 1987. It supplies several transportation-related services to its rail service users, but also intends to participate in the EDI market though the EDI Gateway service.

Among its activities are car location message (CLM) collections, various logistics information, and bill-of-lading transmission services with on-network translation available. Purchase order and freight bill transmissions are under development.

Shippers can use UPT to exchange data with participating transportation carriers. Initially the service is limited to rail carriers, but the company plans to expand EDI Gateway to include ship and truck lines.

The company also offers PC software to support Gateway services.

I

Western Union Corporation (WU)

1. Background

The pioneering Upper Saddle River (NJ) company has faced significant challenges, including administrative and organizational problems that have developed over its long history. In late 1987, stockholders approved a reorganization plan and takeover by LeBow Industries, and the merger of WU's telex operations with those of ITT World Communications.

2. Services

WU is focusing its efforts on its core businesses as an international record carrier, electronic mail service vendor, and provider of money transfer services. Long-distance (voice) operations and other businesses are being sold.

In late 1986, WU opened its internal Packet Transport Network or PTN-1 (which supports EasyLink) to provide packet-switching services for business customers. The network also accesses EasyLink and data base services. Additional access points are bringing the network to 180 cities, and 800-number access is being provided.

3. Western Union and EDI

WU's EDI service, as well as being an insurance industry interface service, consists of menued options on the EasyLink E-mail service, which claims approximately 180,000 subscribers and a volume of 9 million monthly messages.

The company also offers Instant Forms Plus software, which allows users to design, use, and transmit business forms, spreadsheets and data base files in machine-readable formats. Accordingly, the software lets users translate data entered on a form into a different format. Although not strictly EDI, it can serve the function.

a. EasyLink EDI

Western Union announced its EDI service in late 1986, and introduced it in early 1988.

- EasyLink EDI does not offer on-network translation, although the ability to translate from EDI to telex, FAX, or hard copy output is incorporated.

- An extra-cost priority delivery feature moves EDI transmissions ahead of others on the packet network; however, the company claims that 90% of all WU messages are delivered within 20 minutes.

b. InsLink

Western Union has also announced a service called InsLink for the insurance industry's version of EDI, which is called Interface.

By using IIR/Acord formats, agents can send data through the service to multiple insurance carriers and receive competitive price quotes. Other functions are also supported. Translation from the IIR/Acord standards to the insurance carrier's data formats, if necessary, would be done by WU's on-network processors.

4. Major Customers

The company has worked with an aerospace contractor (Textron-Lycoming, Stratford, CT) as a beta site, and will be targeting its customers in the grocery industry, which makes up the largest single vertical industry group using its EasyLink E-mail products. In addition to these two markets, electronics will likely be targeted.

5. Major Alliances

The company has signed with Telecomet Japan to market EasyLink services to Japanese business customers, and is testing X.400 E-mail links with several European PTT E-mail services.

ITT Worldcom, which is being merged with WU's telex operations, is connecting its network with the packet networks operated by Pacific Bell, Southwestern Bell, and Bell Atlantic for international messaging.

WU has an agreement with Citicorp International Communications to jointly offer EDI-like messaging services to the banking community. Citicorp's Intelligent Banking System service, which restructures telex messages into standard formats, is being integrated with EasyLink.

WU is certifying various EDI translation packages for use on its network. Among those verified for use are ACS, APL, Baggerly & Associates, EDI Inc., EDI Solutions, Metro-Mark, Piedmont Systems, Supply Tech, TranSettlements, and Release Management Systems.

WU's money transfer service has recently been expanded to Canada through CNCP Telecommunications, and the companies have several relationships covering transborder data and Telex traffic.

6. Strategies

Although Western Union has experienced financial difficulties, company officials maintain that by layering EDI services onto its existing messaging services, it is able to participate with a relatively small investment.

Western Union is promoting cooperation among third-party EDI services, developing customer support services, and considering formation of an EasyLink user's group to bring it into closer contact with its customers.

Although it originally intended to use its existing marketing structure of sales representatives and agents for selling EDI, with the merger of ITT Worldcom and the need to streamline operations, this plan is being rethought.

- Western Union's services, such as telex and money transfers, are sold through independent agents who often operate out of storefronts.

- The company has also used its own telemarketing sales force to sell various services.

- Western Union has highlighted its EDI capabilities in recent business press advertising, the only example of this advertising approach INPUT has seen.

Just as it has worked to migrate its telex users to EasyLink services, the company may take a similar approach regarding EDI, which it considers an extension of the E-mail service. This strategy would acknowledge the rapid decline in telex usage. Also, by integrating EDI with E-mail and facsimile delivery options, WU offers bridging messaging services similar to those of its competitors.

WU is expected to eventually leverage its international capabilities into the market for international EDI services, and has indicated future support for the X.400 message-handling system in association with EDI.

7. Financials/Market Position

The company took a $603 million charge against first-quarter 1988 earnings for costs primarily related to its exit from long-distance voice

and private line services. This contributed to a loss of slightly over $625 million for the quarter.

For the first quarter of 1988, the company reported a 15% increase in revenues to nearly $235, compared to almost $205 million for the first quarter of 1987.

In April, 1988, WU announced plans to reduce its workforce by 25%.

Western Union posted a profit of $88 million for the fiscal year ending December, 1987, due to financial restructuring that extinguished its debt and cancelled an operating loss of $65 million. Company officials intend to make the restructured company profitable again by 1989. Operating revenues for 1987 fell to $802 from the 1986 figure of $889, primarily due to declines in telex services.

In 1986, the company posted a loss of $531 million.

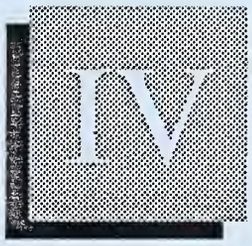
Western Union's EDI service was not formally introduced until 1988; therefore, no revenue from production services was realized in 1987.

WU's EDI beta pricing is comparatively low as the company seeks to attract price-sensitive companies new to EDI or seeking an alternative to other services.

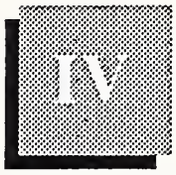
8. Comments

Western Union's corporate plan is to become a non-facilities-based provider of specialized business and consumer services. Accordingly, the company's national microwave network, installed in the 1960s, is slated for sale or lease and the company will be leasing facilities either from the buyer or from other carriers to connect its switching facilities.

WU's EDI development has high visibility with its new corporate management, who apparently view the application as a natural extension of the company's existing messaging services. EasyLink EDI is also seen as an opportunity to develop a profitable new business able to contribute to the bottom line.



Bank EDI Service Providers



Bank EDI Service Providers

In a survey of 193 banking executives conducted for INPUT's multiclient study *Banking and Financial Services: The Next Decade*, 55% reported current or planned EDI projects, with regional and money center banks reporting the highest levels of involvement or planning.

Although these findings indicate interest, the evidence shows that banks have been conservative in their approach to EDI services, wrestling with their appropriate roles as potential full-service providers, or as conduits for EFT operations associated with EDI transactions. EDI services in banking are usually related to the industry's Automated Clearing House (ACH) and Electronic Funds Transfer (EFT) payment systems, and are seen as closely aligned with the cash management services many banks offer corporate customers.

Bank EDI/EFT activities are just getting started, with the best-known examples being services provided for General Motors by a consortium of banks, freight payment services, the U.S. government's Vendor Express electronic payment program, and document EDI services for international trade applications.

In 1987-1988, "intelligent telex" services emerged; these services convert incoming telex documents, such as letters of credit, into standardized formats for further processing. Earlier attempts at such services were limited by high error rates.

Mortgage bankers are just beginning research on adopting EDI techniques, using X12 formats, for Computerized Loan Origination (CLO) documents as well as others, some of which are sent to insurance companies, thus offering a bridge between insurance "Interface" EDI and X12-type EDI.

Bank involvement in EDI services is just getting started; therefore, no revenue figures are reported.

A

First National Bank of Boston

This bank has over 200 offices located in over 35 countries, with what it claims to be the fourth-largest international network among U.S. Banks. Like many banks, it provides trade services to customers, principally through Trade Service Representatives.

- Electronic services are supported between a customer's microcomputer and the bank for transmission during business hours.
- These services, called Trade Key, support the creation and tracking of various documents.

The Bank of Boston has also been providing freight bill payment services for approximately 30 years. It has been receiving increasing volumes of data electronically from transportation carriers, forwarders and shippers using TDCC formats.

- Freight bills are matched with carrier information for payment by the bank's freight payment operation called Freight Controller.
- Duplicates are flagged. Audits, analysis and management reports are optional.
- The system is designed to reduce freight billing and payment operations and is recommended for shippers or motor carriers with over 500 monthly freight bills.

Major carriers electronically submit payment information directly to the Bank, while smaller carriers tend to process through TranSettlements' clearinghouse (described in Chapter II).

Approximately 250,000 freight payments are handled monthly. Currently 15% of incoming freight bills, and a lower proportion of outgoing transactions, are handled via EDI.

B

Chase Manhattan

Chase offers several services and software packages used in international trade under the names Chase Trade Manager and Chase Trade Exchange.

- The Electronic Letter of Credit software package creates a trade instrument on a microcomputer and transmits it to Chase for relay into the back-office operations of an advising bank, using the Chase Data Network, a combination of direct dial, and alternately GEIS' international VAN.

- The data is translated between private and TDCC/X12 codes. The micro translator was developed from Transportation Data Coordinating Committee (TDCC) software, with enhancements produced by Chase.

- Trade Reporter tracks trade transactions conducted through the bank and covers various international credit and document instruments.

- Letter of Credit Advisor provides for electronic notification of export letters of credit advised or confirmed by the bank, speeding document delivery time.

- Chase Electronic Bill of Lading (CEBOL) supports the creation and transmission of the Bill of Lading and Export Declaration by exporters to freight forwarders and carriers. Transmissions can be done micro-to-micro, micro-to-mainframe, or micro-to-electronic-mailbox.

- The electronic documents conform to TDCC and NCITD standards. A security/authentication feature is available.

- As of December, 1987, the service was being used by 23 companies, including transportation carriers, shippers, and freight forwarders.

Chase's Trade software can be integrated with GE Information Service's Trade*Express workstation. Although supporting some EDI formats, company officials say they are watching EDIFACT developments for future implementation, and are evaluating additional documents to support.

CTI is being expanded, with pilot tests in Hong Kong and Brussels, and CTI branches at Chase's branches worldwide.

C

Chemical Bank

This bank provides micro software called ChemLink L/C, which supports the creation of, and on-line status monitoring of, commercial letters of credit, amendments, airway releases, and steamship guarantees.

Chemical Bank, through its terminal-based ChemLink balance-reporting system, accepts Cash Concentration and Disbursement plus Addendum (CCD+1) EDI-formatted data being used by the U.S. Treasury Department and others.

The data are reported in human-readable forms. Payment information is available on-line, in a data transmission, in a special report, or on a monthly statement.

D

Irving Trust

Irving Trust uses Telenet for its electronic letter of credit services that conform to the X12 format. The service is supported through three processing centers, including one in Hong Kong.

E

First National Bank of Chicago (First Chicago)

1. Background

First Chicago is the tenth largest bank in the U.S., with assets of $44.2 billion and revenues (1987) of $4.26 billion.

2. First Chicago and EDI

The bank examined EDI as both a market opportunity and as a user. It established EDI relationships with its suppliers, evaluating (and commissioning) software and network services options from a consumer perspective, and it established networking relationships to support EDI (and other) payment services.

Currently, First Chicago offers EDI professional services, and a number of payment, collection, and advising services, using several ANSI-X12-compatible or Bank Administration Institute formats.

First Chicago is the lead bank in an eight-bank network serving General Motors in its electronic payments program. The service uses ANSI X12 820 (payment/remittance advice) transactions. Most traffic between banks is carried on a direct basis, with traffic from users coming through multiple VANs. Outbound reports are deliverable by MCI Mail and other E-mail vendors.

3. Major Alliances

First Chicago has demonstrated a willingness to experiment with EDI services, often through alliances. However, several of these experiments were short-lived, in part due to circumstances affecting the bank as a whole and not necessarily related to the EDI experience.

- Using GE's international network, First Chicago earlier offered the Accelerated Trade Payments (ATP) service, designed to speed the process by which international trading partners receive payment. ATP, which shortened the time needed for trade documentation, has since been discontinued.

- First Chicago, working with Sterling Software's Ordernet division, formerly operated a media conversion center for data entry, for converting paper to EDI formats for trading partners, and for creating paper documents from EDI data. The joint venture has been dissolved although Sterling Software continues hard-copy delivery options through other means.

- For several years, First Chicago's subsidiary Comtrac provided EDI, freight payment, and other services to the transportation industry. Comtrac was divested by the bank, and is now a wholly owned subsidiary of CASS Information Systems (St. Louis, MO).

First Chicago has had a development relationship with a subsidiary of Interchange Systems, Inc. of Lexington (MA).

4. Strategies

First Chicago sees EDI as a strategy for expanding its wholesale banking financial services.

First Chicago believes financial institutions will play a major role in processing payment information as well as handling traditional banking functions, with substantial benefits to be realized by integrating and automating these functions.

5. Comments

First Chicago has taken risks, and has had internal changes due to external factors such as international loan problems.

The company's strategy is to create systems designed for specific industries. For example, automated freight payments were offered by Comtrac subsidiary. An invoice pay venture with Sterling Software was designed for the hardware industry.

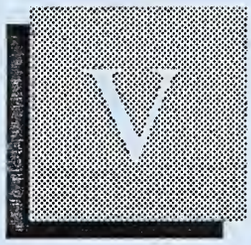
The bank has created some of the most EDI-aware individuals. Through its early work as an EDI user, it has gained a respectable store of institutional knowledge, which it is applying to its services.

F

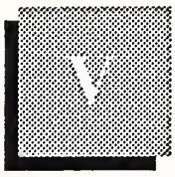
Security Pacific National Bank

Los Angeles-based Security Pacific has introduced EDI services as part of its cash management functions, and has started using the technique in its own procurement operations.

The bank plans three types of EDI/EFT services in 1989: payments between large corporations, lockbox services, and documentary services, which will supply customers with monthly electronic statements of all their bills and payments.



Canadian EDI Providers



Canadian EDI Providers

The EDI Council of Canada was formed in December, 1984. Its members evaluated various EDI options, and learned from U.S. EDI experiences. The Council's policy requires participants to use third-party services, rather than implement private EDI systems.

The X.400 electronic mail standard is intended for use to connect EDI mailboxes, supporting various communications, speeds, and protocols. This approach is leading to faster development of Canadian EDI than otherwise would have been possible.

The major third-party networks and services providing EDI services in Canada are affiliates of US vendors (GE Information Services, IBM, Sterling Software), US-based Kleinschmidt, and several Canadian firms.

This chapter profiles one recent market casualty, one company INPUT prematurely reported as a casualty in an earlier report, and one continuing vendor. (Information about GE-Canada can be found in the company's profile in Chapter II.)

A

CNCP Telecommunications

CNCP (Toronto), jointly owned by the Canadian Pacific and Canadian National railroads, entered the EDI market in mid-1988 with services for MacMillan Bloedel, Ltd., a major natural resources firm. As of mid-1988, six major suppliers were in piloting with MacMillan.

CNCP is remarketing PC software from the APL Group (Wilton, CT) and was negotiating with other firms for similar agreements.

CNCP is a Dialcom electronic mail licensee, although this software is not used to support EDI. On-network translation is not available.

CNCP also has a business relationship with Western Union, but, to date, no links for EDI transborder traffic have been established.

The company's initial strategy appears to be focused on the forest products industry.

B
Crowntek

1. Background

This Markham, Ontario company is a member of the Crowntek group, which in turn is part of Crownex, Inc., an integrated services company involved in insurance, financial services, health care, and as information technologies.

Earlier known as Datacrown, the company was formed in 1972 by the merger of a subsidiary of Crown Life Insurance Company and another data processing company.

In 1988, the company bowed out of the EDI business, sold its customer list to Sterling Software's Ordernet, and sold its EDI software and professional services business to a management group.

2. Services

Crowntek Communications handled IBM-based processing and network services, while other divisions sold value-added integrated computer systems, software, consulting, and education.

3. EDI and Crowntek

Crowntek entered the EDI market in May, 1986 as the first Canadian-owned full-EDI-service provider.

In early 1987, Crowntek announced it was discontinuing EDI services and recommended its customers to Sterling Software's Ordernet Division. Two reasons for withdrawing from the market were given:

- The parent company (Crownx) made a strategic decision to divest itself of its technology arm, and the company began the process of selling these business units. The decision was due to unsatisfactory financial results and followed a reorganization and cost-cutting measures.

- Although the company was experiencing good growth in EDI, it was disappointed in its prospects for future volume and couldn't justify the investment needed to continue to break even.

Crowntek reported 46 customers for its EDI services, although INPUT believes several were using multiple networks for their EDI transactions.

As a further divestiture, a group of five Crowntek employees, led by an individual who developed the company's EDI offering, purchased the EDI software and professional services portion of the business.

- The new group, Lakestone Systems Inc. (Willowdale, Ontario), is focusing on the Canadian market, but also providing worldwide support for Metro-Mark's line of EDI software. Accordingly, the company is also going by the name of Metro-Mark of Canada.

4. Comments

Crowntek has the dubious distinction of being one of the few to drop out of EDI services.

- Observers familiar with the company indicate the problem might have been that it is technology, rather than marketing, driven.

- Further, the company's EDI unit reportedly had three managers in as many years, and its orientation remained primarily toward selling raw remote-computing "cycles," rather than adapting to changing customer needs.

C

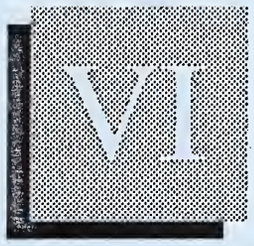
Telecom Canada

Telecom Canada represents an alliance of virtually all Canadian telephone companies, some formed by provincial governments and others private companies providing regulated-monopoly services.

Trade Route EDI services have been provided for three years through Envoy 100 network services from Telecom Canada. The service does not offer on-network translation.

Trade Route is a domestic service, although Telecom Canada does maintain X.400-based gateways to both Telenet and AT&T Mail in the U.S. These gateways can support cross-border transmissions.

In late 1987, Ameritech Services, Telecom Canada, and Telenet initiated a joint venture establishing iNet America, which plans to offer EDI and other services in the U.S., and which will eventually link with the Canadian service. iNet is described in Chapter VII.



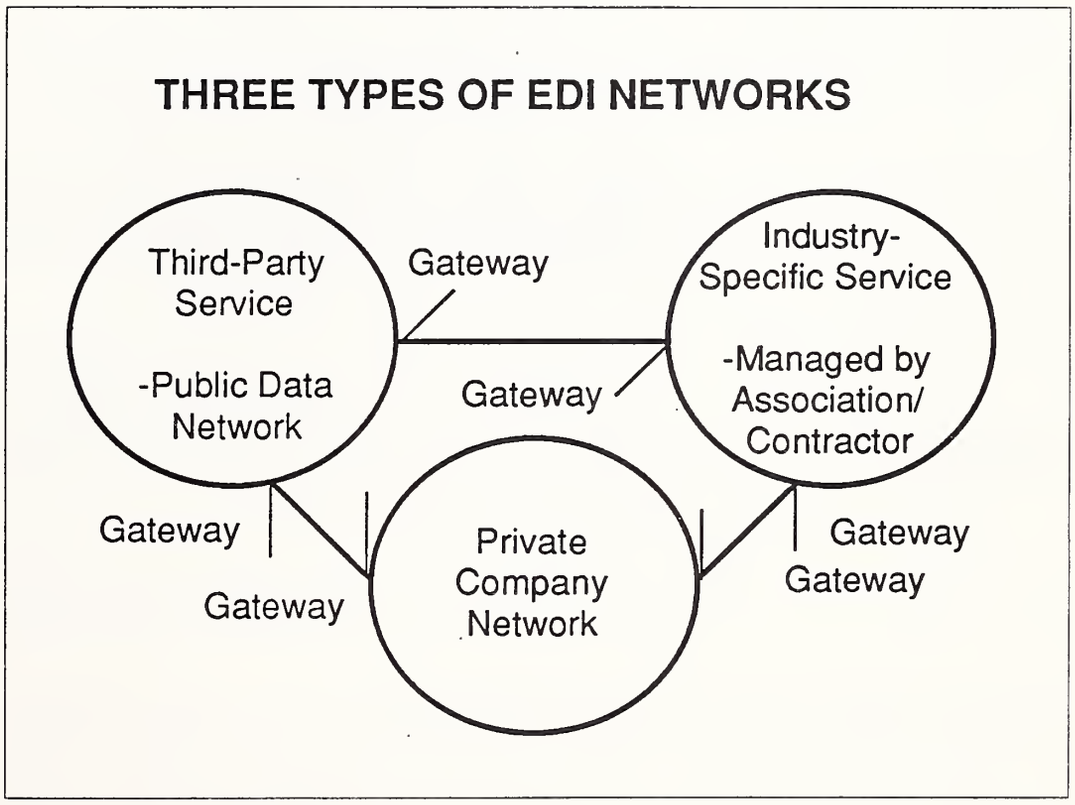
Industry Clearinghouses

VI

Industry Clearinghouses

As Exhibit VI-1 shows, there are three types of EDI networks:

EXHIBIT VI-1



- The third-party service provider, such as GE, McDonnell Douglas, and Western Union.
- The private EDI network, such as Sears', GM's, or Caterpillar Tractor's.
- The industry clearinghouse administered by an industry association.

Companies in the last category are profiled in this chapter.

Note that although some industry clearinghouses manage their own networks and processing facilities, they can also use the facilities of commercial vendors.

A

Air Transport Association of America

This Washington-D.C.-based association administers Specification 2000 (commonly called Spec 2000), an EDI service for supply transactions in the air transportation industry.

Processing and networking is provided by Aeronautical Radio Inc. (ARINC) of Annapolis (MD), and access is also available through the Societe International de Telecommunications Aeronautiques (SITA) network and via Telex. Additionally, participation is possible through the exchange of magnetic tapes.

As of mid-1988, approximately 6,000 entities representing 123 participants and including 25 international airlines were using the system, which is not yet fully operational. This share is believed to represent 2% of the potential market. Other users include aircraft materiel suppliers, the Federal Aviation Administration, airline food service companies, credit card companies, and services.

Spec 2000 evolved from a predecessor called Spec 200, which was developed in the late 1950s for provisioning, order placement, and shipment information. It used punch cards and formats that were (and remain) industry specific.

In 1984, a joint airline/supplier task force was formed to review the future direction of EDI in the industry, and Spec 2000 was created.

The service supports:

- Provisioning—the selection and procurement of parts, equipment, and support materiel for operating and repairing aircraft or special equipment.

- Procurement planning—which provides data on parts for sale and supports a quotation process. An on-line data base of parts and equipment numbers, prices, and lead time data is maintained, providing one-stop shopping for users.

- Order administration—covering order placement, inquiries, order status reports, exception reporting, and shipment advisories. Bar-coded shipping labels are supported in this process.

Spec 2000 also offers PC-based software called the Order-Forwarding System for data entry and communications, adhering to Spec 2000 formats.

The Spec 2000 standards are maintained by a task force consisting of both domestic and international airlines and suppliers. There have been discussions with the Aerospace Industry Association to compare Spec 2000 formats and ANSI X12 to resolve variances so that companies involved in aircraft maintenance won't need to manage dual standards.

Separately, ARINC's Data Network Service (ADNS) will be used for electronic messaging for technical queries regarding interface designs to the Customs Service's Automated Manifest System (AMS), a module of the Automated Commercial System (ACS), which allows members of the import/export community to file required documents with the agency.

INPUT estimates Specification 2000's 1987 revenues at under $1 million because the service was just becoming operational.

B

Insurance Value-Added Network Services, Inc. (IVANS)

1. Background

IVANS (Greenwich, CT) is a nonprofit membership company established by several property and casualty insurance companies to facilitate communications between independent agents and member carriers.

2. Services

IVANS uses the IBM Information Network's Insurance Communications Service and, more recently, the Sears Communications Network, for network services, messaging, data base access, and interactive inquiries. Services are provided at volume discounts.

Independent property and casualty insurance agents can directly access a carrier's computers for rate quotes, filing new policies, modifying existing policies, or accessing customer information.

Approximately 40 property and casualty insurance company host computers are connected to the IVANS network, which serves approximately 6,500 agents.

Additionally, 23 life insurance companies, two health insurance companies, and 30 other industry participants use IVANS, accounting for services to an additional 1500 users. Approximately 300 are joining the network monthly.

Through the IBM Information Network, IVANS is connected to insurance markets in the UK and Canada and is negotiating for data transport to and from Europe.

3. IVANS and EDI

Most of IVANS traffic (approximately 90%) is in an interactive mode, and therefore does not strictly fit the definition of EDI.

Batch processing between an agency management system's application and IVAN-accessed applications is possible, but accounts for a relatively small amount of IVANS' volume. Batch insurance interface in this manner fits the definition of EDI.

Standards used may be company specific, or may conform to the IIR/ ACORD formats (Insurance Institute for Research and Agent Company for Research and Development (White Plains, NY), two industry groups that merged several years ago). The association developed formats for paper and electronic documents.

4. Strategies

In 1987, the company reached breakeven and shortly thereafter decreased its pricing. This had the effect of increasing volume and revenues.

In 1987, IVANS officials arranged for a group discount for long-distance voice services from MCI on behalf of its membership. IVANS hopes to apply the same principal to purchasing-oriented EDI by representing its member companies in negotiating volume pricing for EDI and EDI/EFT services for purchasing consumables at a discount.

IVANS is working in a fragmented marketplace, with independent agents located throughout the country, each with priorities that may preclude the actions needed to access IVANS and gain the benefits offered. Accordingly, the technical and business training task has been difficult.

Company officials see signs of accelerating adoption of IVANS.

Over the next five years, the company expects to see significant penetration of the independent-agent market, a segment responsible for approximately one-third of the nation's insurance coverage as measured in premium volume. This penetration means IVANS expects to grow its current user base of 3,000 independents to approximately 25,000, or half the number of independent insurance agents.

5. Financials

After three years of activity, IVANS is now "profitable" whereas before its operations were supported partly through assessments. IVANS operates on a nonprofit basis, billing its member carriers direct costs.

In 1986, IVANS officials indicated they billed member companies approximately $6.5 million, while expenses were more like $7.5 million.

1987 revenues were approximately $7 million.

As of mid-1988, the network was realizing monthly profits of over $100,000, despite price reductions.

C

National Electronic Information Corporation (NEIC)

1. Background

NEIC (Secaucus, NJ) was formed in 1981 by 11 large private health insurance carriers as a clearinghouse to speed hospital claims processing. Services to physicians and dentists, through remote-computing firms, were later added.

Development and data processing, originally handled by Boeing Computer Services (Vienna, VA), were later taken over by the NEIC staff.

2. Services

The initial service, introduced in 1982, is called Health Claims Distribution System (HCDS).

- A physicians' version, called Medical Claims Distribution System (MCDS), allowing doctors to submit private commercial insurance claims, was introduced in 1985.

- A Dental Claims Distribution System (DCDS) was added in 1987, initially involving 18 dental insurance carriers.

Upon hospital admission, insurance recipients present magnetic striped cards (called "The Stripe") to verify eligibility and establish proper billing procedures. However, the card is not required.

Claims information can be submitted on computer tapes, or transmitted via telecommunications links. Third-party administrators and billing services can also submit data on behalf of their clients.

- NEIC edits claims for completeness and returns flawed submissions the next day for resubmission.

- Validated claims are sorted and distributed in batch form to the appropriate insurance carrier.

Exhibit VI-2 shows NEIC's electronic claims processing cycle.

In addition to providing a clearinghouse for claim handling, NEIC sells software to hospitals in support of its services.

3. NEIC and EDI

NEIC accepts health-care claims in electronic form based on formats developed by the Health Care Financing Administration (a department of the U.S. Health and Human Services Agency, which administers Medicare). This variety of EDI is called Electronic Medical Claims.

- These formats are Uniform Billing 82 (UB 82), with which all hospitals submitting claims now comply, and HCFA 1500.

- A format developed by the American Dental Association (ADA) covers dental claims.

- Additionally, a "universal" NEIC format is used, which provides for all information required by various carriers, and for fields used by the state versions of these formats.

NEIC says that savings of $1-3 per claim are possible by using its paperless claims system, and processing time can be reduced by as much as two weeks. However, according to users interviewed by INPUT, this advantage is often subverted in cases of large claims, which must go through medical review and audit processes prior to payment.

EXHIBIT VI-2

ELECTRONIC CLAIMS PROCESSING CYCLE

Insurance Carrier	Employer	Covered Employee	Health Care Provider	RCS (Optional)	Clearing House
• Issues ID Card • Evaluates Claim Data	• Distributes Card	• Presents ID Card	• Verifies Eligibility and Completes Claim Data • Transmits Data	• Receives Data and Transmits Information to Clearinghouse	• Electronically Edits, Validates, and Sorts • Sends Error-Free Claims to Carrier and Returns Incorrect Claims to Provider

4. Major Alliances

NEIC originally used McDonnell Douglas' Tymnet as its network, later switching to GE Information Services Company. GEIS itself sells NEIC's services to physicians, medical groups, and physician-oriented health care processing firms through its EMC*Express EDI offering.

In 1987, McDonnell Douglas took an equity position in the company, placing several executives in charge of NEIC. Now, once again, Tymnet is the primary network used.

NEIC has developed business relationships with hospital turnkey systems providers such as McDonnell Douglas' Health Services Division (Hazelwood, MO) and Shared Medical Systems (Malvern, PA) to support automatic transmission of claims data to NEIC as a by-product of the billing process.

NEIC also has relationships with RCS firms providing processing to the industry; with hospital groups that support their members with data processing; and with Blue Cross/ Blue Shield organizations that process for their members and often for Medicare/Medicaid under contracts with those organizations. NEIC is working with Blue Cross/ Blue Shield and other insurers in an attempt to establish itself as a single source for claims submissions.

- In total, approximately 100 RCS and turnkey firms provide NEIC services as an add-on to their services and systems.

5. Major Customers

As of 1987, NEIC processes claims for 40 insurance companies, representing over 85% of group health insurance business. There are approximately 700 hospitals and other health care providers and 75 health-claim-processing vendors using NEIC.

6. Strategies

The company's alliance approach furthers NEIC's market reach more efficiently than direct sales efforts. However, the company does market to hospitals with in-house processing, and to hospital groups.

NEIC maintains contact with its users through semiannual conferences and newsletters. It has simplified the procedure for submitting claims by relaxing the number of data fields required for electronic claims—from 12 to 4.

Company officials indicate new types of services are being developed, such as coordination of benefits, electronic funds transfer, and pharmaceutical claims.

7. Financials

NEIC's 1987 revenues were approximately $4 million, with 90% representing processing (i.e., EDI) income, which is billed at a flat yearly rate. The balance comes from software sold to hospitals.

Approximately 3 million claims were processed by NEIC in 1987.

The company had been charging a flat yearly fee for unlimited usage, a pricing policy that has recently been revised.

8. Comments

INPUT plans a more in-depth look at the EMC variety of EDI in the 1989 research program.

D

Railinc Corporation

1. Background

Railinc (Washington, DC) is a wholly owned information services subsidiary of the Association of American Railroads (AAR).

Railinc started as a service exclusively for railroads and later added services for other users such as automakers, large shippers, private fleet managers, and suppliers.

2. Services

In addition to its EDI services, Railinc provides industry statistics, rate information, customized software, telecommunications, and remote computing services primarily for private transportation activities. For example:

- ULMER (for Universal Machine Language Equipment Register) is a computerized version of the Official Railway Equipment Register, the "official" source for rate determinations and mileage settlements. PC software permitting access to this information has been introduced to supplement mainframe access.

- ReLoad is a distribution support system for multilevel rack cars used by automobile companies to minimize empty car miles.

- A Just-in-Time inventory management system is being developed jointly with IBM's Information Network for use by Mazda.

Railinc operates and maintains a private network called TeleRail Automated Information Network (TRAIN II). Dedicated lines connect to primary users, with toll-free dial-in circuits available for lower volume usage.

Most major rails in the U.S. and several in Canada and Mexico use the network in some fashion or another, although usage is concentrated in the eastern U.S. because the network is based on the location of corporate railroad headquarters. Undisclosed international activities are being examined.

3. Railinc and EDI

Railinc provides store-and-forward messaging and mailboxing services for EDI, largely associated with private transportation needs.

Railroads automatically send data to Railinc's computers, where a data base is created. Data is processed twice daily and deposited into users' electronic mailboxes. Information covers some two million freight cars, trailers, and containers operating on facilities owned by approximately 500 railroads.

Two EDI/logistics services are SAM (Shipper Assist Message) service for high-volume users and CARLO (Car Location Message Dial-In Service) for low-volume users, both developed by the AAR and the National Industrial Traffic League.

In addition to car location messages (CLMs), other EDI transactions such as administrative and tracing messages, waybills, and invoices are exchanged between carriers and shippers, using TDCC, ANSI X12, and standards developed by Railinc. EDIFACT formats will also be supported.

- On-network translation services are available.

- Railinc's Car Location Messages from AAR member railroads are also available through McDonnell Douglas' EDI-Net, which adds additional railroad information to its service.

- Interline billing and settlement data between trucking firms and railroads is frequently interchanged through TranSettlements (profiled in Chapter II), and functions such as car repair billing are also handled.

Railinc offers users microcomputer EDI translator software called EDI Synapse.

4. Major Customers

Seventy-five major rail carriers use Railinc's services, and the majority of all interline (between railroads) waybills are exchanged on the network. Additionally, access to auto and chemical manufacturers, other suppliers, ocean and motor carriers, and other VANs can be accomplished through the RailInc network. The U.S. Postal Services uses Railinc for communications with railroads carrying the mail.

In all, there are approximately 300 customers directly connected to Railinc, and several hundred more attain access via most VANs.

5. Financials/Market Position

Railinc officials report that monthly volume for EDI applications through the network is approximately 4 billion characters.

Railinc officials estimate 1987 EDI revenues as between $4 million and $5 million.

6. Strategies

Railinc offers its communications and processing services to make rail freight hauling more attractive than the alternatives.

Since it is a for-profit subsidiary, Railinc can pursue business opportunities in nonrail industries and sees itself as providing EDI services to a range of industries. However, INPUT feels the company's efforts will be directed primarily at rail customers and major railroad users.

Other possible areas of involvement are electronic funds transfer, interchanges between railroads and ocean carriers, and data interchanges with U.S. Customs.

E

Transnet/ The Management Information Systems Group, Inc.

1. Background

Developed in 1975, Transnet is one of the first electronic ordering systems, originally used by five companies in the automotive parts aftermarket.

Services were later expanded to additional users, and administration of the network was transferred to the Motor and Equipment Manufacturing Association (MEMA) and its for-profit, taxable subsidiary, the Management Information Systems Group.

2. Transnet and EDI

Although Transnet's development predates ANSI EDI standards, its services are clearly EDI. Transnet users enter orders on their order entry systems, and batch-transmit them to Transnet for distribution to suppliers. The focus has been exclusively on purchase orders, although additional transactions (i.e., invoices) are being added.

- Minimally, Transnet validates order formats and separates them for transmission to suppliers.
- The network offers several options—such as validation of part numbers and measuring units, accumulated prices or weight in any given transaction, order consolidation, management reports, and E-mail.
- As certain totals are reached, the system can notify the user of available price breaks.
- Errors are reported to the user for correction.

The association has introduced ANSINet to complement Transnet, and recommends ANSI X12 format usage on the new system.

Translation services from the Transnet format to a version of X12 are available, and additional translation capabilities are being considered; however, company officials note that the proprietary format is approximately 30% more efficient than the X12 standard due to less overhead.

3. Major Alliances

Transnet uses GE Information Services Corporation's value-added network for telecommunications services. For a time, GE marketed Transnet services in Canada.

A number of turnkey systems companies (notably, Triad Systems) have been licensed to incorporate Transnet's capabilities into their ordering systems.

4. Major Customers

Approximately 100 manufacturers, representing most automotive after-market suppliers, plus 6,000 wholesalers and retailers representing 80% of the largest distributors, use the system. Among these users are:

- AC Delco Division
- General Motors
- Champion Spark Plug Company
- Purolator
- Goodyear Tire and Rubber Products
- Timken

Approximately 35% of Transnet users are not involved in the automotive industry, but rather are appliance distributors, mass merchandisers, warehousing companies, heavy equipment manufacturers, electronics distributors, and utility companies. Additional representative users are:

- General Electric Appliances
- Stanadyne Diesel Systems
- Bendix Heavy Vehicle Systems Group

Transnet enjoys several industry association endorsements: the Automotive Industries Association for use in Canada, the Bearing Specialist's Association, and the Automotive Warehouse Distributor's Association, representing large automotive replacement part wholesalers who send products to distributors and volume retailers.

5. Strategies

Suppliers pay usage fees based on the GE network's retail pricing, with MEMA paying discount volume prices. The margin realized supports Transnet's operations.

- Buyers do not pay any usage charges other than the costs of connecting to a GE Information Services network node.

- MEMA distributes PC software free to users to facilitate usage.

MEMA will be adding additional transactions to the ANSINet service, to eventually marry the two systems for ordering and other document interchanges.

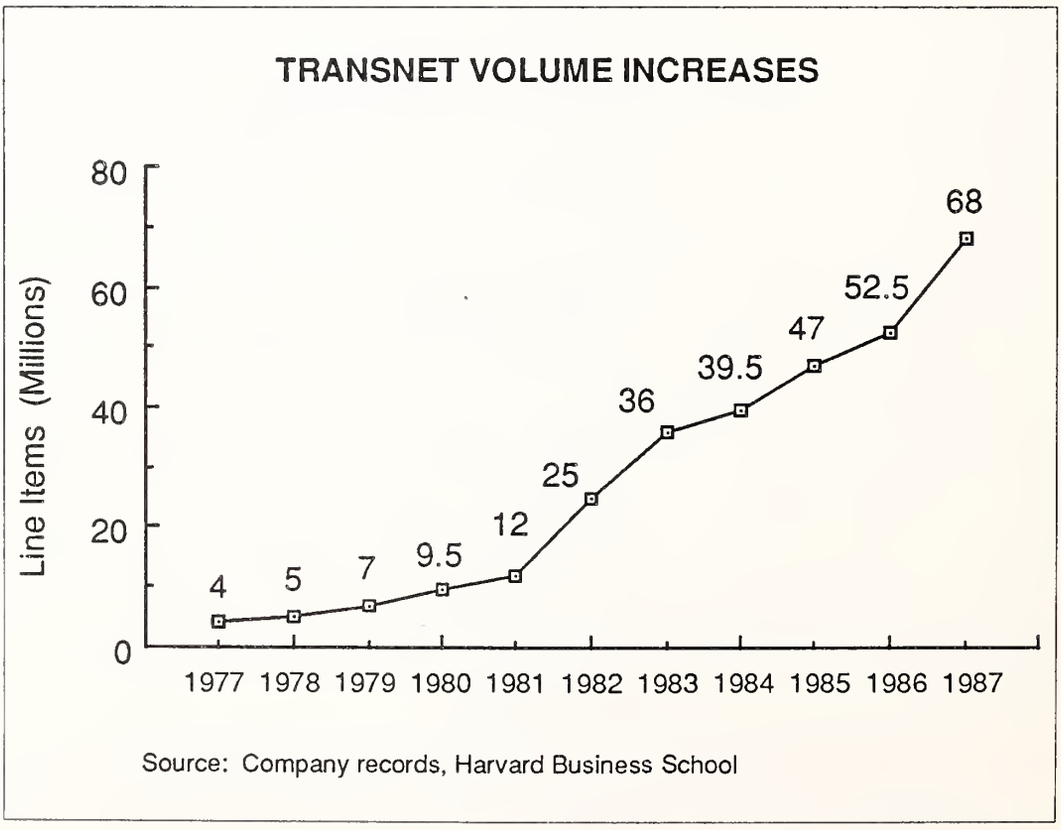
The Management Information Systems Group represents Transnet on industry standards committees, and administered bar-coding techniques within the automotive parts industry.

6. Financials

In 1987, Transnet processed approximately 70 million line items representing approximately 500,000 monthly orders. The company anticipates a 20% growth in transactions in 1988.

Exhibit VI-3 shows how Transnet's volume has increased since its inception.

EXHIBIT VI-3



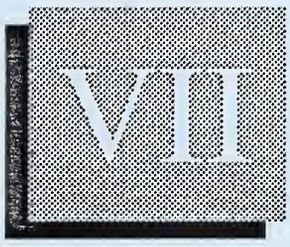
Source: Company records, Harvard Business School

Costs for processing a single-order line item range from approximately $.03 to $.70, depending on transaction size, individual user volume, and the costs of value-added features such as reports, compliance checking, or translation.

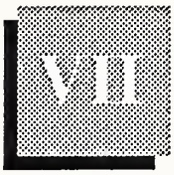
INPUT estimates Transnet's 1987 revenues at minimally $3 million, and potentially as high as $5.5 million.

7. Comments

Transnet sales have relied heavily on direct-mail marketing, association endorsements, trade shows, and personal relationships between company officials and industry decision makers. As the company matures and changes, and as it seeks to expand its services, new approaches will likely be required.



Potential EDI Service Providers



Potential EDI Service Providers

This chapter describes the prospects of several companies with the potential of offering commercial EDI services. Several of these firms have made public their intentions, whereas others are providing EDI or EDI-like services for corporate owners (i.e., EDS, Sears Communications Networks).

A

Bell Operating Companies/ Independent Telephone Companies

Due to recent regulatory rulings, BOCs are free to offer certain types of information services. While on-network translations continue to be prohibited, store-and-forward mailboxing services may be provided.

In general, BOCs are first applying their new store-and-forward freedom to voice mail messaging. Others are looking to expand internal electronic mail systems into commercially available services that may eventually include EDI. Still others are participating purely as network providers, while some view the provision of gateways as their most appropriate role.

1. Ameritech Services

Ameritech Services (Schaumburg, IL), a subsidiary of the RBOC and Groupe Francais D'Infomatique (GFI-Paris), has conducted a joint research, development, and trial of a service called DOMINI. GFI was a wholly owned subsidiary of Scicon International, a division of British Petroleum. However, Scicon was recently purchased by Systems Designers, and the GFI unit is being sold.

As of early 1988, DOMINI was in beta sites, with a forms capability offering rudimentary EDI functionality. Additionally, DOMINI offers E-mail and computer conferencing. The service is targeted to small businesses.

GFI contributed hardware, software, and data processing equipment, while Ameritech supplies its local-area data transport network (LADT).

GFI is using a modified version of its X.400 standard E-mail product, called Comutex 400, for DOMINI.

2. Pacific Bell

In mid-1988, this BOC announced that Pacific Bell Connection, an E-mail application/service jointly developed with Digital Equipment Corporation, would go into test marketing with graduate business students, a health maintenance organization, and members of the Easter Seal Society.

- Connection is based on the X.400 Message Handling Standard.

- The application has embedded EDI capabilities that are intended for internal use, but that may be offered as an EDI service.

3. Southern New England Telephone

Technically, SNET is not a Bell Operating Company, but an independent. Because it was not under the same restrictions, SNET was able to innovate with data services, including a statewide E-mail service, and the first interconnection between a Local Access Data Transport (LADT) telephone company packet network and a wider area VAN, in this case McDonnell Douglas' Tymnet.

- SNET's service area is the state of Connecticut, which is all one Local Access Transport Area (LATA). Its LADT is called ConnNet.

- In addition to Tymnet, SNET interconnects with ITT World Communications (now part of Western Union) for international messaging.

Southern New England Telephone, working with Blue Cross/Blue Shield of Connecticut subsidiary ProMed, is supporting EMCS on SNET's ConnNet statewide packet network. Data bases are also available on the service called Connecticut Health Information Network (CHIN).

SNET was believed to be poised to resell EDI services; however, in 1988, the company reorganized and several managers took early retirement, delaying any formal resale agreement.

4. Other BOC Involvement in EDI

Bell Atlantic Data Services has been promoting its network design and network management services in support of EDI.

NYNEX officials announced an offering similar to Pacific Bell for E-mail, with EDI a possible future service.

Working with National Data Corporation (profiled later in this chapter), Bell South Advanced Networks is supporting the Health Care Data Services Division with medical insurance eligibility verification and claims-processing applications.

B

British Telecom PLC/ Dialcom Group

1. Background

British Telecom Private Limited Company (BT) was created through the privatization of the former U.K. government telephone monopoly. BT bought ITT's Dialcom (Silver Springs, MD), in 1986.

In Early 1988, BT announced a restructuring of its value-added network services, with the Dialcom Group expanded to include the operations of four divisions.

- These four are Dialcom, Inc.; Telecom Gold (a public E-mail service in the U.K.); British Telecom's business services including Prestel videotex service; and a computer network services division that supports U.K. operations.

- The reorganization created a division with over 900 staffers, and an income projection of $100 million in its first year of operation.

2. Services

Dialcom provides E-mail, forms processing, data base access, and other forms of remote computing services. Services can be accessed via direct dial, or through most VANs.

In late 1987, Dialcom released Dialcom400 software for commercial use by both public and internal E-mail systems. As the name implies, it is based on the X.400 message-handling system. By adopting this standard, network interconnections between dissimilar message systems are facilitated.

In the US, Dialcom400 is part of a new Pathfinder suite of services, including both interconnects to private E-mail systems and message interchange.

3. Dialcom and EDI

A British Telecom/McDonnell Douglas joint EDI venture in the U.K. called Edi*Net was disbanded in late 1986 after 18 months of operations and a failure to sign any customers.

Dialcom does not currently offer EDI services, but rather does have a forms capability on its E-mail service. INPUT believes Dialcom may be building EDI capabilities into its software for its own use and that of its licensees.

4. Major Alliances

BT's joint venture with McDonnell Douglas is not the only partnering example found.

A unit of the company has worked with Computer Sciences Corporation (CSC) to develop automated customs agency systems in the U.S. and elsewhere.

Dialcom400 is licensed by several PTTs, including Deutsche Bundespost (West Germany) and the PTTs of Finland, New Zealand, Spain, and Malta.

Other licensees are:

- KDM, Inc, a Japanese public service provider owned jointly by KDD, the international communications carrier, and by Mitsubishi.
- Canada's CNCP Telecommunications.
- Southern New England Telephone (SNET-Connecticut), which used the software as the basis of its MailPlus offering.

5. Major Customers

Dialcom claims a 20-country network with approximately 280,000 users. Although owned by a British firm, Dialcom has not had any difficulty in winning U.S. federal agency contracts or in providing E-mail services during the 1988 Democratic National Convention.

6. Strategies

Since it is now participating in a competitive marketplace, British Telecom and the Dialcom Group will adapt to advancing technologies and users' needs for diversified services.

- The former bureaucratic decision-making process is being changed, with several units formed to address specific market and customer needs. The reorganization is seen as a way to gain synergy and a critical mass of resources.

BT as a whole is becoming more market driven than its previous monopolistic incarnation. It is more involved in international activities, has developed strategic partnering relationships, and has made acquisitions to further its direction.

Similarly, Dialcom hopes to reach its goals through joint ventures, acquisitions, and gateway services, including those possible through BOCs.

7. Financials/Market Position

British Telecom reported that 1988 first-quarter earnings were up 8.8% to $701 million on revenues of $5 billion. Earnings for the fiscal year ending in March were up 12.7% to $2.7 billion on revenues of $19.2 billion.

C

Computer Sciences Corporation (CSC)

1. Background

Founded in 1959, CSC (El Segundo, CA) is the largest independent professional services company in the industry, providing systems engineering and development, communications engineering, facilities management, and processing/network services.

The company was one of the first remote computing services. CSC's international value-added network (INFONET) was formed in August 1983.

- INFONET currently serves approximately 400 international cities, with links in 19 nations through dedicated lines, and in 51 additional countries served via IRC connections.

- Exhibit VIII-1 shows CSC's international access points.

EXHIBIT VII-1a

COMPUTER SCIENCES CORPORATION
INFONET
LOCAL SUPPORT LOCATIONS AND NETWORK ACCESS

COUNTRY	LOCAL SUPPORT	NETWORK
Argentina	Servicios de Computación (SEDECO)	
Australia	Computer Sciences of Australia	Austpac
Belgium	Computer Sciences Europe	DCS
Canada	Computer Sciences Canada	Datapac
Denmark	Datema A/S	
Finland	Datema OY	
France	Interpac	Transpac
Fed. Rep. Germany	Computer Sciences International Deutschland Gmbh	Datex-P
Hong Kong	Communication Services Ltd. (Subsidiary of Hong Kong Telephone)	
Italy	Informatica Distribuita SPA	Itapac
Japan	Mitsui Knowledge Industry	DDX-P
South Korea	Data Communications Corp. of Korea (DACOM)	
Mexico	Secretaria de Comunicaciones y Transportes	Telepac

EXHIBIT VII-1b

COMPUTER SCIENCES CORPORATION
INFONET
LOCAL SUPPORT LOCATIONS AND NETWORK ACCESS

COUNTRY	LOCAL SUPPORT	NETWORK
Netherlands	CSC Nederland BV	
New Zealand	Computer Sciences of New Zealand	
Norway	DATEMA Norge A/S	
Philippines	Mega Computer Corp.	
Portugal	Telematica y Base de Dados	Telepac
Singapore	Integrated Information Pte. (Telecommunications Authority of Singapore subsidiary)	
South Africa	Computer Sciences PTY Ltd.	Saponet
Spain	ENTEL	Iberpac
Sweden	DATEMA Information AB	
Switzerland	CSC AG (SCHWEIZ)	
Rep. of China	China Data Processing Ctr.	
United Kingdom	Computer Sciences Company Ltd.	PSS

2. Services

CSC targets large multinational and multilocation organizations, including Fortune 1,000 companies in the communications, distribution, and manufacturing industries. However, the majority of business comes from federal and state agencies.

3. CSC and EDI

CSC's services and facilities are used in a number of EDI-related and EDI-like ways:

- For the Air Force it is developing a stock control and distribution system.
- It is developing a private data network for U.S. Customs.
- A shoe retailer uses a CSC-developed merchandise and inventory control system to improve sales and profit performance by cutting seven days off the time needed to ship shoes to its stores.
- CSC's German subsidiary is ensuring just-in-time delivery of materials by steel suppliers to automakers by interconnecting their computer systems with those operated by the German railways.
- Administrative information and software is carried between a software vendor's domestic headquarters and its international offices by CSC's Infonet.
- The company has a range of applications for the distribution industry.
- CSC's Notice E-mail service handles form processing and file transfers, and is used by several customers in an EDI emulation.
- CSC developed a customized international sourcing network (called Sinet) for a garment manufacturer.
- Under a systems integration and facilities management contract for the Miami International Cargo System (MICS), CSC developed what is described as the first fully integrated cargo clearance system in the U.S. It is similar to those designed by CSC for England, France, and Australia.

4. Major Alliances

Subcontractor and frequent CSC partner on port automation projects has been British Telecommunications unit National Data Processing Service (NDPS).

In late 1986, CSC announced an agreement for the Infonet division to market CompuServe services (mostly data bases) internationally. CSC also interconnects with Tymnet.

5. Strategies

In mid-1988, CSC revealed plans to sell controlling interests in its subsidiaries in several Western European countries to the PTTs operating there, while maintaining the international network connections.

- CSC does have partial ownership positions in two European data network projects: France's Transpac and the Nordic countries' Infopak.

- Such linkages would expand the company's presence, particularly for interconnections to SNA networks.

CSC feels it has relied too heavily on government business and is working to expand its activities into more profitable commercial activities.

CSC officials have shown interest in buying firms experienced in systems integration, health care, and/or financial services. In recent years the company has purchased:

- Computer Partners, Inc. (Waltham, MA), a small professional services firm that custom-designs computing systems.

- Comtec, Inc. (Farmington Hills, MI), an information systems supplier to health maintenance organizations.

The company plans to invest $200 million in acquisitions over the next several years.

CSC has been investigating an adaptation of Notice for EDI applications for several years, but as yet has not introduced a service that can clearly be called electronic data interchange.

6. Financials

CSC has announced a goal of more-profitable commercial activities accounting for one-half of its activities by the 1990s. This represents a shift in priorities from governmental contracts, which are increasingly fixed price and low profit.

Fiscal year 1987 revenues broke $1 billion, an increase of 23% over 1986. Net earnings were over $32 million, a gain of 35%.

In 1987, the network services accounted for revenues of nearly $81 million, with 54% from federal, state, and local governments; 27% from commercial activities; and nearly 19% from international business.

7. Comments

CSC has EDI projects and services within its portfolio, albeit not in the mainstream of EDI. But as of yet, the company has not chosen to embrace the EDI concept in its marketing approach. The company as been called technology, rather than market driven, although its successes in competitive governmental bids tend to negate this analysis.

CSC's international profile, its work for customs agencies, and its port automation projects suit it well for service to multinational corporations—Infonet's chosen market. CSC's relationships with government agencies should lead to additional federal and state EDI projects. Its one limitation, the direct availability of its network through only 50 domestic points, is a minor one since access is possible through at least one other VAN.

The company's facilities management contracts in medical claims processing suggest activities in the electronic medical claims variety of EDI. And of course, CSC's professional services capabilities means it can handle complex systems integration projects that will increasingly have EDI components.

D

Electronic Data Systems (EDS, a wholly owned subsidiary of General Motors)

1. Background

In October, 1984, General Motors acquired EDS (Dallas, TX) and its subsidiaries to provide GM with the expertise to automate its processing, manufacturing, and communications, and to provide a vehicle for diversification into information services.

Prior to the GM purchase, EDS showed brisk acquisition activity, primarily of processing service companies, but also of turnkey systems vendors.

The EDS network (EDS-NET) includes 19 processing centers, nearly 700 PBXs, and hundreds of thousands of terminals. It was consolidated from approximately 100 smaller networks operating within GM.

2. Services

EDS is a leading services company that provides facilities management processing for insurance, government-funded health insurance, telecommunications companies, and banking.

EDS offers commercial systems integration services: managing a complex project during development and managing the facilities after the system is built.

3. EDS and EDI

Through the Demand Systems Division (Warren, MI), EDS operates I Share as the EDS Supplier Information System for small suppliers to GM.

- The system works on an interactive basis, supplying form-fill-in screens to small suppliers. The data entered then become EDI data, formatted to GM standards, and are batch distributed to the appropriate GM applications.

- The system handles materials releases, advanced shipping notices, and E-mail. It works on a subnetwork of EDS Net called PacketPlus, essentially as a node on the GM network.

- I-Share will add other EDI documents to its transmissions, as the need arises.

Dealerline, a distributed remote computer service dedicated to automobile dealerships, can potentially support EDI, including financial, parts, services, and sales applications.

- As of early 1988, approximately 170 systems were sold.

- However, the company suspended sales of the system until late 1988 and cited an inability to support customers.

EDS was responsible for a major commercial systems integration project for K-Mart, which included EDI components. An EDS project team is working to harmonize GM's decentralized EDI approach.

EDS' involvement in health claims processing and in the insurance industry presumedly includes activities in the varieties of EDI called Electronic Medical Claims Submissions and insurance interface. INPUT plans to further examine these activities in the 1989 research program.

4. Strategies

In mid-1987, Western Union announced a gateway between its EasyLink electronic mail and EDS Diamond Communications E-mail.

- Diamond Communications links eight incompatible electronic mail networks into a single entity used by some 35,000 GM employees.

- With Western Union's new EDI offering, presumedly this connection can be leveraged for EDI between GM units and their suppliers.

EDS' EDI service within the GM community, I Share, is actually a hybrid, providing interactive screens to suppliers, then converting the data into EDI formats before transmission into GM's systems. EDS officials allow that this experience can form the basis of a commercial service beyond this GM "captive" service.

E

INet America

In late 1987, Ameritech, Telecom Canada, and Telenet announced a joint venture to establish iNet America, a U.S. version of a network service offered in Canada. In Canada, Telecom Canada offers the Trade Route EDI service.

Services planned for iNet include data bases, electronic mail (based on Telenet's Telemail), and EDI.

- Although Telenet will host the applications, data base gateways, and provide some networking for the venture, it is unclear whether the EDI service will be Telenet's private-labeled version of Sterling Software's Ordernet service, for which it has an earlier agreement.

- Connections to the Canadian EDI service are probable, based on customer demand, and X.400 links to other messaging systems are planned.

F

MCI Communications Corporation (MCI)

1. Background

MCI began as Microwave Communications, Inc. and intended to provide short-haul communications links. These links became longer and, overcoming AT&T's monopoly along the way, the company became the most successful interexchange carrier (IXC), with its own microwave, fiber optic, and satellite networks.

2. Services

The company, through its subsidiaries, provides various domestic and international services, including voice, data, record, personal communications, and E-mail services.

3. MCI and EDI

Aside from offering networking in support of private EDI implementations, MCI is known to be monitoring EDI developments as a parallel technology to its MCI Mail services.

MCI Mail's Scripts service supports an EDI-like forms-fill-in capability that could serve as a migration path for customers to true EDI services.

4. Major Alliances

MCIMail and CompuServe's electronic mail services are interconnected, and additional E-mail interconnections are believed to be under development.

Another MCI division, MCI International (Rye Brook, NY) has introduced an EDI-like money transfer service called Automated Money Transfer Service.

- AMTS uses artificial intelligence to evaluate unformatted telex information and sends payment instructions into a subscribing bank's system.

- AMTS will be used by Irving Trust (New York) and Chase Manhattan Bank.

- INPUT believes the service is based on technology developed by RCA Global Communications, which MCI acquired from GE in 1987.

5. Strategies

MCI is positioning its E-mail forms and hardcopy delivery options to allow users to send business information to those not ready to receive it electronically via EDI.

MCI has announced it will support X.400 E-mail standards that may eventually incorporate EDI capabilities and that will facilitate internetwork messaging.

The Automated Money Transfer Service is an EDI-like offering that could serve as the basis for future EDI products and services.

6. Financials/Market Position

MCI's experience in the highly competitive interexchange carrier market has caused writedowns and staffing cuts. Additionally, the company is heavily investing in upgrading its network, and recently purchased RCA's Global Communications Company. These factors suggest that the technical and marketing costs of new services would be examined carefully.

However, in mid-1988, MCI reported record earnings for the quarter ending June 30, an increase of 28% from the same quarter the previous year. Company officials claim to have achieved 10% of the long-distance market, and estimated that this share would double over the next five years.

7. Comments

INPUT believes that MCI Mail and MCI International will eventually be merged to cut costs as the company struggles in a competitive environment to attain long-term profitability. Another reason for combining resources is to to build synergistic strengths between the two messaging subsidiaries.

Previously, IBM's partial ownership of MCI may have been a factor influencing MCI's direction. Although IBM's resources could have been helpful in new-product development, the company's involvement was primarily an investment position rather than a functional merger. Additionally, an MCI EDI initiative would have competed with IBM's Information Network's EDI Services and therefore may have been directly or indirectly discouraged.

However, with MCI attaining new profitability, and with its announced stock buy-back, MCI will be free of these constraints (if they existed), and free to pursue other alliances that may have a bearing on its EDI capabilities.

G

National Data Corporation (NDC)

1. Background

This Atlanta-(GA)-based company provides specialized data processing, facilities management services, and professional services in bank cash management, credit card processing, information management, health care, telemarketing processing, and related services.

2. Services

Among services provided by NDC are distributed processing services, which place on the customer premises micros that share processing with NDC's mainframes; and software sales to provide in-house functionality.

Of the approximately 300 applications supported are those in decision support, small bank management, and messaging.

NDC's Health Care Services Division provides processing and turnkey systems for pharmacies. Price and new drug information can be received by systems that interface with electronic cash registers.

- Third-party electronic claims can be prepared internally or sent through the company's NDC*Networks for processing. NDC's central processors collect these submissions, consolidate them by insurer, and deliver the information electronically to each insurer.

Services and systems can be resold by the company's primary customers. For example, drug wholesalers can market systems to their customer base in independent, chain, hospital, and nursing home pharmacies.

Data bases available from NDC are focused on financial and economic statistics, as well as zip code demographic information used in support of telemarketing/customer referral services.

3. NDC and EDI

NDC is evaluating its potential role in EDI services, primarily through its client banks, and in association with its other services in healthcare and retail segments.

The major activity is development of a service/product called NEDX or National Electronic Data Exchange, which leverages NDC's relationships with users of the company's NETS product for electronic banking and data transmission.

- This aligns EDI with cash management, but sees banks taking an active responsibility for the movement of EDI data beyond payments.

- NEDX is scheduled for availability before 1990.

NDC also provides Electronic Medical Claims processing through turnkey systems and remote computer services, and is supporting EMC and eligibility verification in association with Bell South's Local Access Data Transport (LATD) packet network, called PulseLink. The company also supports RxNET, a subsidiary of the National Association of Retail Druggists, with electronic processing and payment of prescription drug claims.

4. Strategies

NDC's primary thrust into EDI services hinges on the assumption that users will see banks in more than their traditional roles as money managers and money movers. Clearly users will require more financial services within their EDI functions, but the question is: will banks be able to supplant existing third-party EDI services that can add financial services through affiliations with banks, or by buying banks to gain access to Automated Clearinghouse networks.

Regardless of this central question, NDC's strategy in other areas may be emulated in its EDI offering. By offering specialized micro-based systems and services for resale by others in their sphere of influences, NDC expands its marketing presence and allows banks and drug wholesalers to offer added value to their customers. This approach could serve NDC's EDI strategy.

NDC targets industries having synergistic processing characteristics, with each business unit pursuing its opportunities while sharing common corporate resources.

- For example, retailers using NDC's credit card service may also require cash management and telemarketing services.

- Drug wholesalers selling micro-based systems can use NDC's telemarketing operations to sell systems. The company's marketing also includes direct sales, industry seminars, and convention participation. Active user groups provide close links with end users to provide timely market research feedback.

NDC serves approximately three million retailers, a level where EDI has yet to fully penetrate. This provides the company with an opportunity to offer bundled data and financial EDI transaction services to users inclined to seek a "one-stop" solution.

5. Financials

NDC as a whole recorded nearly $160 million in revenue for fiscal 1987, an 11% increase over the previous year. Income from continuing operations reached nearly $14 million, a 20% increase.

The information management time sharing services division (Rapidata) earlier experienced continuing declines, and in 1987 was sold to Electronic Data Systems.

H

Sears Communications Networks, Inc.

1. Background

SCN (Arlington Heights, IL) was incorporated on January 1, 1984, to consolidate the various network and processing facilities contained within the over-180 members of the Sears conglomerate. The network's backbone of T-1 links connects to 18 main switching centers and all Sears sites nationally.

Separately, Sears Communications Networks LTD operates in Canada.

2. Services

The Sears Communications Network, an advanced SNA service, was introduced as a public offering in March, 1986. It supports Sears companies and other firms with credit transactions and EDI services, and serves as the technology platform for products such as the Discover card.

As an SNA network, SCN competes specifically with IBM's Information Network, as well as other VANs.

SCN provides networking for the tax preparation firm of H & R Block, which operates many of its offices from within Sears retail stores. This SCN service connects to the Internal Revenue Service's electronic tax return filing program called SUPER, which is being tested in many regions.

Sears Payment Systems provides point-of-sale and credit card processing services for companies outside of Sears, such as Phillips Petroleum. These services internetwork with banking industry networks for credit card settlements.

The company represents Sears in the Prodigy videotex joint venture between the retailer and IBM.

3. SCN and EDI

Sears has had a private EDI network application called SENDEN (Sears National Data Exchange Network) in operation since 1971. SENDEN is now administered by SCN, and used by some 7500 Sears suppliers. A number of those companies use the network for EDI applications among themselves.

Originally based on proprietary standards, SENDEN is migrating to ANSI X12 standards (specifically the VICS subset used in retailing), and TDCC formats will be used when no X12 transaction set is available for the specific application.

- This direction is being taken to provide relief for smaller suppliers who previously were required to comply with proprietary standards.

- Now, the open public standards can be adopted for both Sears and other customers.

4. Major Customers

SCN is used by insurance companies, including those within the Sears family (Allstate) and is used by the Insurance Value-Added Network Service (IVANS), which had previously used IBM's Information Network on an exclusive basis. Other users include Advanced Micro Devices.

5. Strategies

SCN is differentiated in several ways:

- Pricing. Services are priced by the customer site, including all charges: modems, lines, maintenance, network management, back-up facilities, and usage. The price is quoted on a monthly basis, with maximum increases for subsequent years on a contract shown. This approach offers customers cost prediction/containment benefits.

- Performance Guarantees. SCN offers a money-back guarantee for response time and network availability.

- Technology. The network is also differentiated by a no-obsolescence guarantee.

6. Comments

INPUT believes SCN is examining its experience to determine its appropriate role in providing EDI services beyond those for the several users now using SENDEN for noncaptive EDI.

Its likely that the company's differentiators will be applied to any general EDI offering SCN may develop.

With its links to insurance companies, the network is also positioned to participate in the batch interface variety of EDI, and through services in the distribution area, may also address logistics data interchange services as well.

I

TRW, Inc.

TRW (Cleveland, OH) is a diversified international $6 billion company providing products and services that have a high-technological or engineering content to electronics, defense, space, information, automotive, and energy markets.

To succeed in providing information systems and services, the company recognizes it must rapidly expand its existing businesses, and use its data bases and technologies to develop new information products and services tailored to customer needs.

Although not now involved in EDI, TRW is positioned for EDI and EDI-like services in several ways:

- As a major user selling into several EDI-using markets, such as aerospace and automobile manufacturing.
- As a potential service provider through its acquisition of Teknekron Financial Systems, Inc., which provides information processing systems and consulting services supporting the financial community.
- As a provider of business credit information data bases. EDI here could be an adjunct to approved installment credit contracts and other applications.
- As a professional services vendor, designing, developing, and installing complex government or commercial systems that may have EDI components. For example, the company has developed secure message handling systems for defense agency departments.
- As a partial owner of TransTech Corporation (Emeryville, CA), which provides turnkey systems to the trucking industry, and which has the potential for adding logistical EDI functionality to its products.

J

Westinghouse Communications

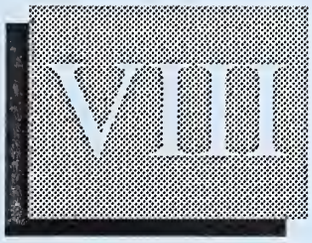
Westinghouse uses EDI, largely on a private network basis, within various units such as its electrical supply division.

In early 1988, the company announced plans to form a network services company unofficially called the Westinghouse Communications Business Unit.

The new unit would be staffed with 120 employees who operate the Westinghouse Information Network (including the Westpac international packet-switching network) and other internal links. The T-1 backbone network has some 70,000 users in 800 worldwide locations operating off 10 nodes.

Among the services proposed for the new unit are network implementation, network management, transmission services, electronic mail (Westpac uses Dialcom software), voice mail, and Electronic Data Interchange.

Westpac is currently used by approximately 600 Westinghouse suppliers and customers.



"Other" EDI Services

"Other" EDI Services

In addition to the firms profiled above, there are several companies that provide services that support electronic purchasing but that may not conform to public EDI standards. This chapter profiles some of these companies. Additionally, a company that serves as a conduit for EDI traffic from its installed base of distributed-processing-service clients is described.

A Industrial Network Systems (INS)

1. Background

Originally formed in 1978, this Maumee, Ohio company was formerly an operating company of Automated Marketplace Systems (AMS—Clark, NJ).

AMS was a privately held company that was being considered by RCA as an acquisition. When General Electric purchased RCA, it chose not to include the company in its portfolio. Instead, a venture capital firm helped establish the unit as an independent entity.

In 1988, the holding company's offices (AMS) were closed and operations were consolidated in Ohio.

2. Services

INS focuses on MRO (Materials Required for Operations) purchasing functions rather than production-oriented purchasing. The service uses a variety of formats. INS provides professional services and builds customized purchasing operations. The company targets operations with over 500 employees.

3. Strategies

The company's strategy is to build supplier networks in various cities and receive fees for transactions through the system.

4. Financials/Market Position

INS claims to have approximately 200 users. INPUT estimates INS' 1987 revenues at $600,000.

B

International Purchasing Network (IPM)

IPN is a start-up company (Westlake Village, CA) that provides an automated purchasing network allowing buyers of electronic components to negotiate with various vendors, coordinate alternative sourcing of new and obsolete products, and develop contractual relationships.

The service is designed to operate as a combined bulletin board service, on-line data base, and Electronic Mail, which allows users to access stored templates for ordering.

Although not true EDI, the service serves a similar, albeit limited functionality. IPN does not provide the means to integrate its functions with users' own applications.

C

Shared Medical Systems Corporation

1. Background

This Malvern, PA company provides remote computing and distributed processing services (DPS), plus turnkey systems and applications software to nonfederal hospitals. It also provides facilities management to group medical practitioners.

2. Services

The Hospital's Services Division provides a distributed processing service (DPS) though an integrated product called ACTION, which runs on DEC VAX minicomputers installed at the hospital and is connected to the SMS data center via leased lines or recently installed satellite links.

SMS' data center primarily supports financial management applications for hospitals.

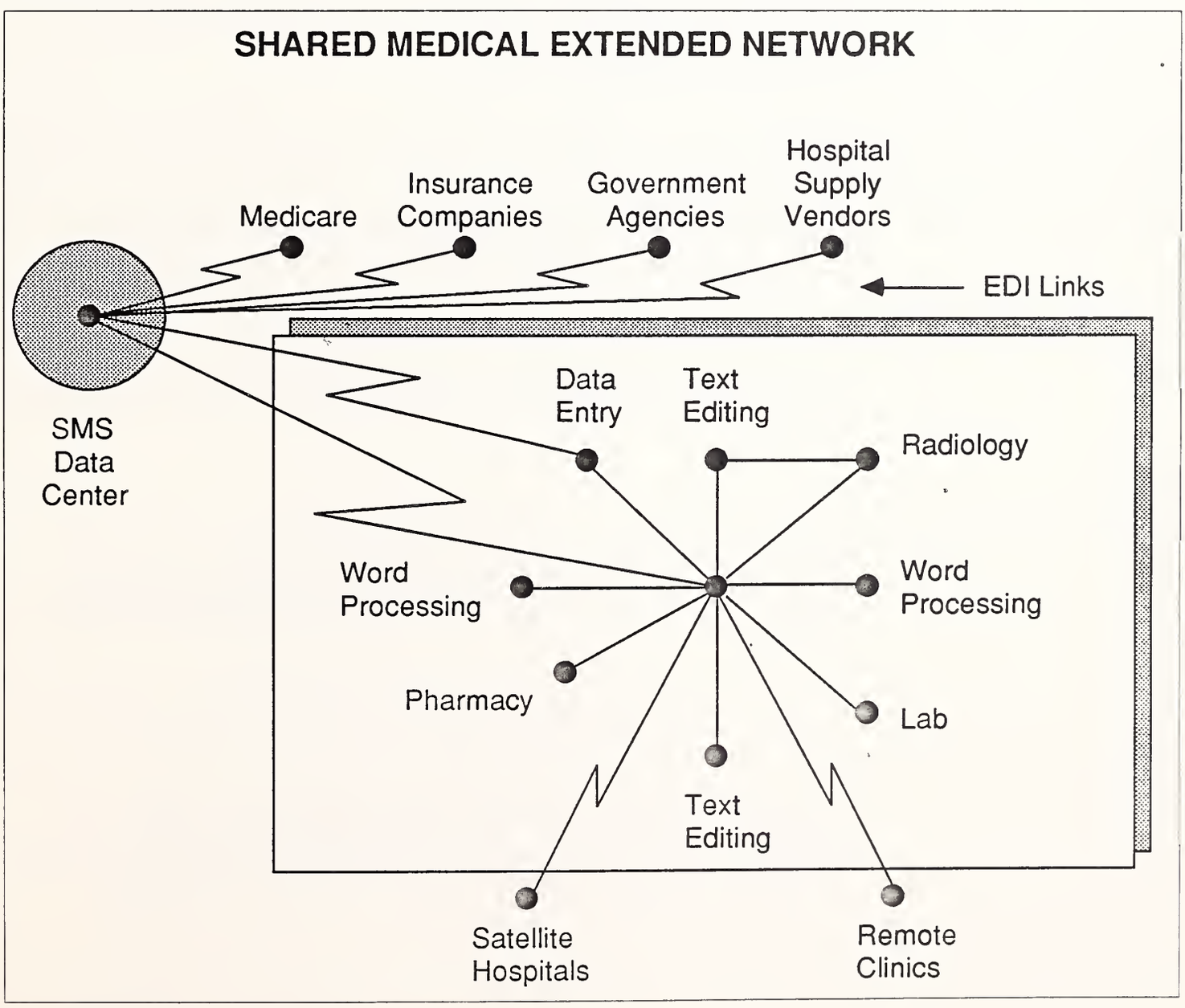
3. SMS and EDI

ACTION's processing functions are integrated, with most processing done on-site, while access to the SMS data center provides connections to non-SMS computers operated by insurers, government agencies, and hospital suppliers.

Thus, SMS places its system at the center of a network linking hospitals, insurers, government agencies, and hospital supply companies.

As shown by Exhibit VIII-1, these links can therefore support electronic data interchange applications for purchasing and electronic medical claims.

EXHIBIT VIII-1



4. Strategies

SMS is one of the largest computer services vendors to the hospital industry. The company aggressively pursues renewal of processing services contracts with group hospitals because these contracts represent the greatest opportunities. The renewal process can be supported by enhancing services with EDI applications.

The company has expanded the role of micros in its hospital information networks with EDI-related applications in Medicare cost reporting. By targeting the center of a large, integrated network for its system, Shared Medical leverages its data communications capabilities as a market differentiator in the hospital information services market.

SMS has added value to its offerings with data base access to medical regulations, thus saving hospitals the costs of collecting frequently changing information themselves.

Regarding SMS' strategy in EDI, the company appears to take a passive role.

- EDI traffic from its installed systems goes through SMS' central processing facility to trading partners, as shown in Exhibit VII-1.

- However, since the company's target market is limited, expanded services and new market development is necessary for continued high growth rates. Accordingly, a more active role for SMS in EDI services is possible.

D

Shipnet Systems Inc.

Shipnet (Glen Ellyn, IL) has been offering an EDI-like service since 1985. The company uses Martin Marietta Data Systems processing facilities, with network access via Telenet and Sears Communications Network.

- Shipnet is a shipping management application that takes a common data base approach and adds value.

- The service matches shippers, receivers, and trucking carriers, and encompasses the tender process, load definition, acceptance, and status tracking. Additionally, freight bills can be handled electronically.

- Data are available to multiple users, allowing anyone with a legitimate interest in shipment status to access the information.

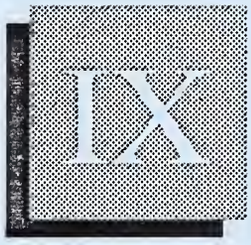
INPUT believes the service is used by between 50-120 subscribers.

E

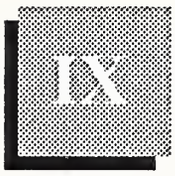
Other "Others"

EDI software provider American Business Computer (Farmington Hills, MI) offers EDI*Share processing for smaller companies that do not wish to implement or maintain their own EDI systems. The service is primarily intended for suppliers to automotive manufacturers.

Electronic Mail Systems (Manchester, NH), which is an agent for most E-mail services and which sells software and provides professional services consulting, offers an EDI-capable order entry service.



Conclusions and Recommendations



Conclusions and Recommendations

EDI shows every indication of being poised for explosive growth through widescale adoption in many (if not most) industry segments. It represents a revolution from millennium-old paper-based operations, and toward an application of appropriate technologies addressing fundamental business needs. Accordingly, companies with EDI products and services are jockeying for positions to capitalize on the growing demands.

However, as this report illustrates, the network/processing services segment of the EDI market is crowded, and more entrants are expected. Some competitors are staking claims to specific vertical markets (grocery, federal agencies, etc.), while others are taking a broader approach.

The costs of competition will likely lead to an industry shakeout. However, INPUT is aware of only one company (Crowntek) that has discontinued EDI operations permanently (AT&T is re-entering). The Crowntek decision had nothing to do with the success or failure of EDI; the decision was part of a larger decision to divest information services totally.

Profitability has been elusive for most EDI vendors. Price competition is cutting profit margins on what are becoming commodity services, while providers seek to differentiate through value-added services.

The broader information services industry pattern of mergers and acquisitions can be expected to reveal itself in EDI, leading to market consolidation. Strong players will be motivated to increase market share, and weaker companies will cut their losses.

However, as EDI continues to becomes a commodity service, and as network interconnections become more commonplace, virtually every network service company will likely have *some* means of providing EDI—minimally as a gateway to an EDI network as ubiquitous as the telephone system.

By then, EDI will have become as commonplace as a telephone conversation or opening the mail.